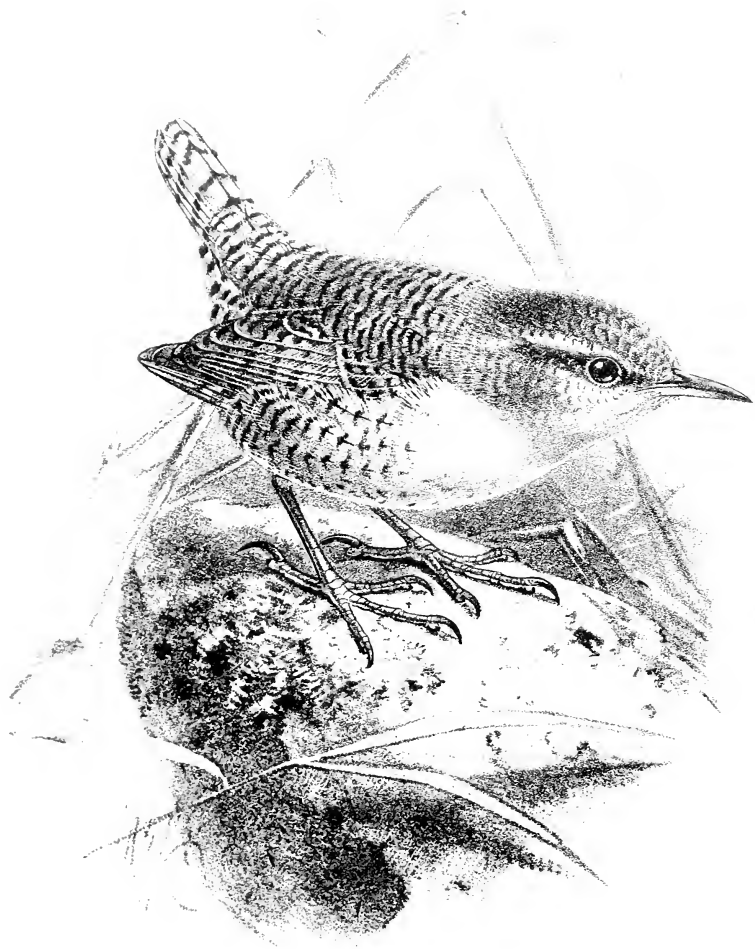




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OUR RARER BIRDS



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OUR RARER BIRDS

BEING

STUDIES IN ORNITHOLOGY & OOLOGY

BY

CHARLES DIXON

AUTHOR OF

'RURAL BIRD-LIFE,' 'EVOLUTION WITHOUT NATURAL SELECTION,' ETC.

PART AUTHOR OF 'A HISTORY OF BRITISH BIRDS'

WITH TWENTY ILLUSTRATIONS BY CHARLES WHYMPER

AND A FRONTISPIECE BY J. G. KEULEMANS



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1888

TO

My Father

THE FIRST TO INSPIRE AND FOSTER

MY ARDENT LOVE

FOR

THE WOODS AND FIELDS AND THEIR WILD INHABITANTS

I DEDICATE THE FOLLOWING PAGES

PREFACE

THE following Studies deal principally with the habits and economy of those rarer British birds which, from the remote and secluded districts they frequent, the localness of their distribution, and their shy and retiring disposition, do not come very generally under the notice of casual observers. In wandering through the woods or along the shore, or over the mountains and the moors, the observer often obtains a cursory glimpse of these our rarer birds ; the object of this volume is to enable him to identify them, and to make him familiar with their habits and characteristics. Fifteen years of my life have been spent in this labour of love—in gathering from personal observation the facts which are here recorded. The greater part of these pages has been written in the places where my information was obtained—in field and forest, on mountain and cliff, with the birds themselves around me. The naturalist may doubtless find some facts new to him in these Studies, and many questions relating to the economy of birds have been discussed. In the following pages I have always endeavoured to lead the observer to a contemplation of those higher questions of Natural Science which Ornithology so aptly illustrates, and to put him in the way of appreciating the scientific value

of his researches. I also believe that in publishing my observations within the compass of a single volume, I am filling a want long felt by field naturalists, who have hitherto only been able to obtain any information respecting our rarer birds from large and costly works on British Ornithology.

In making my selection of our rarer birds from the four hundred species which are regarded as British, I have used every care, weighing impartially the claims of each to be so considered. "Our Rarer Birds," so far as the purposes of the work before us are concerned, are species that cannot be met with everywhere, like the Robin and the Thrush, the Sparrow and the Swallow; and in addition I have laid it down as a *sine qua non* that each must breed within the confines of the British Islands. In this I follow the ornithological axiom that a bird's breeding-place is its true home. Exception has only been made in the case of the Knot; and I am pleased to see that the Snow Bunting's nest has been actually obtained in Sutherlandshire, at an elevation of nearly three thousand feet. The classification I have adopted is what seems to me the most natural, although the many gaps in my list of species, which only a selection of British birds necessarily entails, breaks much of the proper order of sequence. Probably the classification of birds is as far from a definite and natural settlement as ever it was, no two authorities agreeing in their ideas as to the relative value of anatomical characters. Where doctors disagree so wofully, it is not possible within the restrictions of space here laid down either to discuss the pros and cons of scientific arrangement, or to become responsible for any new departure. This work is written for the lover of birds, not for the student of their pedigree or the quibbler over their classification.

The illustrations which adorn many of the following pages have been drawn by my friend, Mr. Charles Whymper, to whom my best thanks are due for the very satisfactory manner in which the work entrusted to his care has been performed. I also desire to acknowledge here the kindness of Dr. Selater, F.R.S., who gave me permission, on behalf of the British Ornithologists' Union, to include in this work the drawing of the St. Kilda Wren, which appeared originally in the *Ibis*.

In submitting this my third volume of bird-life to the reader's notice, it is with the most sincere and earnest wish that he may be led into the wild and beautiful scenes these birds frequent. He who follows the bird into its varied and diversified haunts in quest of information need never know a dull or a heavy moment. Let not the reader rest content with what others tell him; let him go out into the woods and fields, and see and hear these wonderful sights and songs for himself. To have pointed out the way thither will be the source of my greatest gratification.

CHARLES DIXON.



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OUR RARER BIRDS

THE MIGRATION OF BIRDS

MANY of the birds we are about to meet, and whose habits and economy it is our object to study, are either summer or winter visitors to this country ; hence by way of introduction I intend to devote a few of the opening pages of this volume to that fascinating subject, the Migration of Birds.

Perhaps no other habit of birds has given rise to so much difference of opinion, or been enshrouded with so much needless mystery, as their annual movements from place to place. Little need be said on the supposed hibernation of birds—a myth that was devoutly believed in years ago by many accomplished field naturalists. Swallows especially were thought to enter a long trance in autumn, burying themselves in mud at the bottom of rivers and ponds or in holes of buildings and caves, waking into life again with the return of spring. We know now that these birds are not exceptional in their movements, and regularly wing their way to South Africa every autumn. If still further proof were required, it may be found in the annual change of dress these birds undergo. Swallows leave us in autumn in worn and abraded plumage, not moulting before they migrate, as most other birds do, and return in spring in all the splendour of their wedding garments. Even the most casual observer of

birds is familiar with the migrations many of them undertake. In the genial spring, when Nature is waking up from her long wintry sleep, we all welcome back the stranger Cuckoo as a long-lost friend, and greet the skimming Swallows with feelings of unwonted pleasure. They are harbingers of brighter skies, and warmer, longer days; of music, flowers, and foliage; in short, of all that invests a northern summer with its fairest charm! As the year rolls on apace, bird after bird makes its appearance; from the middle of boisterous March to the end of showery April migration is in progress, and stranger after stranger is suddenly but quietly returning to the haunts of its choice. On moor and on mountain, in field and in wood, by the stream and the shore, the summer birds are fast appearing, and imbuing such scenes with joyous life.

What is Migration? How has it been caused? What is its purpose? In the old days the migratory movements of birds were said to be influenced by impulses as mysterious as they were unchangeable. At their stated times birds were thought to leave for their distant destinations, prompted by mysterious instincts, with no chart or compass to guide them; reaching them unerringly, and just as unerringly returning to their old haunts at the change of season. Fortunately much sounder ideas prevail nowadays, and birds are no longer regarded as automatic machines, but as creatures endowed with life and mental qualities the same in kind as man's, differing only in their degree of development. Now we look upon migration as a habit that has been slowly acquired, with many failures and many blunders, which has been performed so often that it has become almost an involuntary action, the result perhaps of unconscious memory. For thousands of years these birds have performed the journey to and fro—they know the road by heart. So often have they and their ancestors repeated the migratory

movement, that perhaps its very cause is now forgotten, and the journey is undertaken as a deeply-rooted habit.

How has Migration been caused? Migration undoubtedly had its origin in the last glacial epoch. Ages ago, when the North Polar Regions, instead of being realms of almost eternal snow, were fertile lands clothed with semi-tropical forests of tree-ferns, magnolias, walnuts, and camphor trees, bird-life abounded in forest and plain, and by the shores of sea and lake. These birds were probably residents; no cause for migration existed, the winters being mild enough to furnish food for all. But this fair scene of Polar glory fades away! The earth gradually changes her position, and the mighty ice-cap begins to form, driving all living creatures southwards or causing them to perish. Birds deserted this doomed land of promise and retired into Africa and India and other southern lands before the mighty glaciers which drifted southwards even as low as the Mediterranean. All this, however, was a work of ages, and during this time the habit of migration was doubtless acquired. As soon as this glacial epoch passed its meridian, and the ice slowly drifted back again, the birds returned farther and farther north each summer, nearer and nearer to the pole, migrating to their old quarters in the south for the winter. So, slowly and gradually, as the ice drifted back again, and vegetation once more crept northwards up the valleys and over the hills and plains of this vast desolation, just as slowly and gradually the birds acquired their habits of migration. With an unquenchable love for their northern home—the land of their birth—they strove each summer to get back again as near as the ice allowed. Age after age the journey became longer and longer, until it is as we know it now in the present day. Water-birds naturally go farther north than land-birds, because their haunts are now much the same as of old; but the land-birds are practically confined to the limit of forest growth.

A word now as to the purpose of Migration. Migration is undoubtedly undertaken for the purpose of obtaining a necessary supply of food. Those birds that migrate must either do so or starve. The Swallow and the Cuckoo, and the army of soft-billed birds that come here with the summer, would doubtless remain here if food were always to be had; but the moment the supply fails in autumn, back they go to lands where insect-life is plentiful and winter is unknown.

Birds pursue certain routes to and fro which it has doubtless been their custom to follow ever since the habit of migration was acquired. These still continue to be traversed, even though the practice involves a journey of many hundreds of miles farther than is actually required! For instance, many of the birds that migrate from Norway and Sweden, and even from Northern Russia, cross to our islands over the wild North Sea, instead of keeping to the continental coastline. Others travel to certain winter quarters in remote parts of the world, from ignorance of the way to those much nearer and in every way suited to their requirements. Thus the Rustic Bunting and the Arctic Willow Wren come every summer as far west as Scandinavia, but return every autumn to India, China, and even the remote Malay Archipelago; and on the other hand, the Red-footed Falcon (a bird which has occasionally been met with in the British Islands), which breeds as far east as Central Siberia, is only known to winter in Africa! The wonderful interest attaching to these extraordinary migrations can only be fully realised when the routes of these little birds are traced upon a map. The explanation of these singular movements is to be found in the fact that when these birds were driven southwards by the glacial epoch, they sought shelter in the countries to which they still unerringly return, although, since they have been able to get back north again, they have increased their

summer range either in an easterly or westerly direction. The Arctic Willow Wren and the Rustic Bunting, on the one hand, do not know of Africa; the Red-footed Falcon, on the other, is ignorant of the groves and plains and perpetual summer of India! A still more extraordinary instance is to be found in the Arctic Tern. This bird is found in summer right round the polar basin, having spread east and west from the shores of the Atlantic; but in autumn the birds that have actually bred on the shores of the Pacific come back again over thousands of miles of land and water, across the continents of Asia and North America to the southern portions of the Atlantic to spend the winter—being ignorant of the fact that the Southern Pacific is just as suitable to their wants! This persistence in following an old familiar route, and in seeking the usual winter home, must cause the death of many birds every season. Birds are apt to lose their way just as human travellers do, and take the wrong route which brings them to lands where they are looked upon as great rarities. Many such birds visit our country from time to time in spring and autumn. In spring the migration is almost universally from south to north; and such birds as Rollers, Bee-Eaters, White Herons, and Vultures occasionally come too far and wander to Great Britain with the stream of our accustomed migrants. In autumn the course is from north to south in the majority of instances; but there is a considerable migration from east to west at this season, which sometimes brings us such distinguished visitors as the Needle-tailed Swift, the White-winged Lark, and the Yellow-browed Warbler—strangers from Siberian steppes and forests, which have lost their way and joined the throng of birds whose usual course lies in this direction.

Birds choose many different highways in their journeys to and fro. Some follow coast-lines, others start boldly across the sea; many journey down great river valleys, or through

lofty mountain passes; whilst others wing their way through the very loftiest air. Many of these flight routes, or "fly-lines," are extremely complicated, and the road taken by one species is often crossed at right angles by that taken by another. Many species seem to follow the direction of ancient coast-lines, now lying buried under the ocean; and this fact may account for so many birds crossing the North Sea to this country, and then heading southwards across the English Channel again. Vast numbers of birds pass our coasts in their great northern or southern journey every season; and many of our own birds fly direct south till they reach the English Channel, and then pass along the coast and downs from Lands End to Dover before they cross the sea and follow the continental coast-line to Africa. Most birds perform their migrations, especially in spring, very quickly; and I am of opinion that they fly at enormous altitudes, far beyond the range of human vision, through the stratum of rarefied air which makes their progress easy, and also assists them materially in their topography.

The migration of birds is most marked in autumn. In spring they come singly or in little parties, and pass as rapidly as possible from place to place; but in autumn many species gather into enormous flocks for the purpose. Who has not seen the Swallows gathered in fluttering thousands on the late September days, when the autumnal tints are creeping over the trees and hedges? Who has not watched the vast flocks of wading birds gathered together for the purpose of journeying in company? How many times do we pause to admire a little party of Pipits, or Chats, restlessly flying southwards; or a company of Goldcrests all eagerly speeding away? Many birds join flocks of a different species to migrate with them; others always fly in pairs; others, again, in family groups. Some birds separate into sexes to migrate, the males being the first to arrive in spring and

the last to leave in autumn. With many species the young birds are the first to migrate, the old birds staying behind until they have completed their moult, although a few old birds are always in their company and serve the purpose of guides. In autumn most birds travel leisurely, staying here and there a day or so to rest themselves and eat where food may chance to be abundant ; in spring they seem intent on getting to their summer haunts as quickly as possible. Some birds always migrate by day ; others just as surely wing their way under the cover of darkness ; whilst many journey by day as well as by night. During the hours of night vast numbers of birds are attracted to the various lighthouses on the sea-coasts, especially in cloudy weather, when they seem to lose their bearings and fly towards the nearest visible object. No pen can do justice to the wonderful sights which may often be witnessed at some of these lighthouses, especially in autumn. The moon is shining brightly in a cloudless sky ; not a bird is in sight ; not a sound is heard. Suddenly a bank of clouds spreads over the heavens, and soon afterwards just as suddenly a vast army of migratory birds make their appearance. Birds of many different species are flying in company. Skylarks have fraternised with Owls, and Redwings and Fieldfares are mixed up with Goldcrests and big lumbering Herons. The lantern is vignettèd in a sea of fluttering birds ; some of them crowd upon the railings and the balcony of the lighthouse ; others beat and flutter against the glass. But as soon as the sky is clear again and the moon sheds light upon the sea and land, the little voyagers pass on, rising to the highest air, where doubtless many old familiar landmarks point out the southern course this feathered army is bent on taking. It is a grand imposing sight to watch this autumn flight of bird-life. I have often seen the air for days full of birds of many species coming from over the sea ; and at night many a low

scream or warbling cry has told me that the feathered hosts were still passing on. Some of our inland districts are evidently in the direct line of flight of many migratory birds. Flocks of Goldcrests or Song Thrushes, for instance, often make their appearance in certain woods or fields every season, stay a few days, and then as rapidly disappear. There is much evidence to show that the mountain ranges which form the backbone of England and Wales are the great "fly-line" of many migratory birds; and I am of opinion that birds are guided to a great extent in their journeys to and fro by lofty ranges of hills.

A word as to the destination of these migratory birds. By far the greater number that pass either along our coasts or from our islands every autumn are on their way to Africa. This sultry continent is the grand winter-home of most of the migratory birds of Europe; but some few species only get as far south as the northern shores of the Mediterranean. Singularly enough those birds that go the farthest north in spring retire the farthest south in winter, and this applies equally to individuals as to species. Birds also must have wonderful powers of judging time, for rarely do we see them back again in their accustomed haunts before the usual period of their appearance has arrived. Should they chance to come too early and find their usual food scarce, they generally wander south again. The migration of birds is beset with many perils. Of the millions of birds that leave us in autumn but a small percentage survive the dangers of the two long journeys and appear again in spring. The greatest mortality is among the young and inexperienced. Thousands perish at sea—too tired to fly across the waste of waters that separates them from land; thousands are devoured by the hungry Hawks that follow in the wake of the great migrating army. Many perish from want of food; others fall victims to various predatory creatures as soon as they reach land

tired and feeble after their long pilgrimage. Sometimes in autumn migratory birds appear in unwonted numbers, having been detained by contrary winds or rough weather till the flocks assumed enormous dimensions—all waiting for the first favourable moment when the journey can be resumed. Many birds, eminently solitary in their habits at all other times, become gregarious or sociable during the periods of migration. Hawks and Falcons often unite into flocks to migrate; so do Woodcocks, Snipes, and Owls.

Migration is of many kinds, and almost every species of bird is subject to its influence more or less. In some countries the great migration takes place to and from the mountains to the plains; in others many birds journey from the coasts to inland districts, or from the wide ocean to the land, or from the woods to more open localities. This may readily be observed, even in our own land. The Meadow Pipit and the Twite migrate from mountain to lowland according to season; the Dunlin and the Golden Plover may be cited as instances of birds migrating from the coast to inland moors; the Guillemot and Puffin, the Gannet and Cormorant, from the sea to the rocks and islands. Even such birds as the Black-bird and the Robin change their ground a good deal with the changing season; and most other species do the same. Some species that are regular migrants in the north of Scotland are residents in the milder climate of England. Birds too are very apt to increase their range if circumstances are favourable. The Rook is gradually spreading northwards and westwards with the planting of trees; so too is the Missel-Thrush; and as many wild districts come under the reclaiming hands of the agriculturist, various smaller birds increase their range, at the expense of their shyer and larger congeners, to whom reclamation and improvement from man's point of view means banishment and ruin from theirs. Excess of population also causes birds

to spread into new districts. Birds sometimes increase too rapidly, under exceptional conditions, and have to wander forth in quest of fresh haunts; as, for instance, the remarkable irruption of Pallas's Sand-Grouse that spread into Western Europe from Siberian steppes some five-and-twenty years ago, and again during the spring of the present year.

A word should also be given to the gipsy migrants. These are birds like the Snow Bunting and the Shore Lark, which have no regular winter home, and only wander southwards as far as the frost compels them. They are for ever trying to get north, and just as frequently being driven back again with each recurring frost or storm. They may justly be called the nomads of the polar regions, able to subsist upon any seed or bud that may be left exposed above the snow.

The migratory movements of birds are interesting in the extreme. Their arrival is the harbinger of spring; their departure the unfailing sign of winter's advent. But of higher interest still are all the causes and influences which prompt and govern these various migratory movements. We see the woods all radiant with opening leaf and fragrant bloom suddenly become tenanted with these little wanderers from sunny southern lands—delicate little creatures many of them, whose bodies would scarcely fill a good-sized thimble; yet we know those frail little feathered travellers have crossed the land and sea for many thousands of miles—they are fresh from the palm trees and glorious wealth of tropical verdure far away in the soft lovely south. The terrors and the perils of the long journey are soon forgotten—like dreams they pass away; and songs of sweetest cadence pour joyously from their little throats. In autumn's balmy days we see these migrants preparing for their long journey. There are young birds now to make that journey with them. All is eager excitement to be gone. The browning leaves and mournful winds of autumn, the first white frosts and cool

nights, sternly bid these little travellers depart. As we watch them flitting restlessly about from twig to twig, or congregating in merry flocks on buildings and telegraph wires, we think of their early departure with regret, and from the bottom of our hearts we wish them a speedy and a safe return.



THE GOLDEN EAGLE.

THE GOLDEN EAGLE

(*Aquila chrysaetus*)

As the Crane and the Bustard have been exterminated from the lowland fens and wolds, the Golden Eagle has been finally banished from English woods and crags, and must now be classed amongst the rarest of our British birds. True, a year scarce passes without one or two of these birds venturing over the border from their native mountains to more lowland scenes ; but their fate is certain, and it is only a question of time before their murder is duly recorded in some local newspaper. The Golden Eagle is one of the noblest of the birds of prey, and by repute certainly the best known. It is not, however, the good fortune of every lover of bird-life to have the opportunity of seeing this noble bird at home ; I will therefore ask the reader to accompany me in imagination to the distant glens and mountains of the north, where I will endeavour to show him the Golden Eagle in its native wilds.

We must leave the haunts of man and his industries far behind us and penetrate into wilds where nature reigns supreme, ere we can hope to meet with this noble bird. The home of the Eagle is amongst the last remnants of primeval Britain. Where he lives the mountains tower on every side, their summits generally hid in cloud-banks or tipped with snow of brilliant whiteness. Rocky glens, wild streams, and broad stretches of moorland waste, above which Curlews and Plovers

scream, lend a charm to the Eagles' haunt. The wilderness is varied by a deep clear mountain loch, a birch coppice, a deer forest, a boggy waste; or its desolation and dreariness is unbroken where big gray rocks, bare hills, and dark frowning glens are on every side in vast monotony. It must not be supposed, however, that even in such secluded fastnesses as these the Golden Eagle is a common bird. You may wander up and down such romantic country for days and days together without once having the good fortune to meet with him. He is a great wanderer, often from home, and explores wide expanses of country in his daily search for food. Sometimes you may come across him as he sits silent and motionless on some lofty crag, where his keen eye is ever on the alert for danger; or more frequently he is seen high in air soaring in boundless freedom over the mountains and the heaths, gliding round and round in wide circles and searching the ground below, or on regular beat of wing hastening to his nest and his mate in some distant glen. There is something majestic about the flight of this noble bird. In ever widening circles he sometimes glides round and round high in air with only a few occasional beats of his long ample wings. Frequently he glides straight ahead, seeming to swim or rather float through the air. Anon he poises like a huge Kestrel and surveys the ground below; then with regular beats of his broad wings passes away into the blue distance that encircles the hills. Many a time and oft the Eagle is mobbed in his trackless course by smaller yet more courageous birds. You may sometimes see the Raven or the Hooded Crow buffet him in the air, should he pass too near their rocky homes; whilst Swallows and Meadow Pipits attracted by curiosity often flit and flutter round him as he sails along.

All the birds of prey are capable of going without food for a considerable length of time—a practice which often serves the Golden Eagle in good stead when his prey is

scarce. But when food is abundant on the hillsides he is truly a voracious feeder, and levies a costly tribute on the sheep-farms. I have known him take as many as thirty-five lambs from one Highland sheep-farm alone in a single season. The mountain or blue hare which lives among the barren stony summits of the hills is a favourite quarry; the Blackcock and the Red Grouse which crow so merrily from the fern brakes and the heather are taken unawares; as are also the Plovers and the Curlews which visit the upland moors to rear their young. When hard pressed for food he not unfrequently makes a meal on carrion, and is often taken in the shepherds' traps when baited with a dead lamb or hare. Nothing comes amiss to this bold freebooter, especially when its young are hatched—anything in the shape of flesh is borne eagerly away. The Golden Eagle is extremely fond of bathing; and I have sometimes seen him stand for half an hour or more in a pool of water and scatter it over his plumage.

The Golden Eagle is one of the first birds to see about nesting duties. Winter still reigns amongst the mountains when this noble bird begins to build his nest, and the eggs are often laid when the moors and hills are buried deep in snow. He evidently times the date of his operations to a nicety; for the lambing season is at its height when his young are being reared and a plentiful supply of food is obtainable. I am of opinion that Golden Eagles pair for life. For years and years the same locality is frequented by a pair of birds. Each season the old nest is renovated and patched up, or a new nest entirely is built close to the remains of the old one. An inland site is generally selected, on the precipitous sides of some lonely glen or on a ledge of a beetling crag amongst the mountains, but sometimes a shelf on the ocean cliffs is chosen. Stray with me to the wild cliffs that overhang the tempestuous Minch on the west coast of Skye. Here the Golden Eagle still breeds in one or two chosen

localities, and here we can still study the nesting economy of this fast disappearing species. As we wander over the breezy hillsides bird-life in abundance may be seen. Carrion Crows and Hoodies rise from the short turf, or fly from the rocks and circle high in air above our heads; Skylarks soaring to the clouds trill forth their sweetest strains; Herring Gulls and Kittiwakes keep up a noisy clamour as we near the sea-cliffs; Oystercatchers utter their shrill whistle as they fly along the shore from one shingly point to another; whilst farther inland the notes of the Curlew are sounding distinctly but faintly from the moors. The bleating of lambs high up the hills and the barking of dogs mingle with the dull roar of the water hundreds of feet below. Every step the cliffs become higher and steeper, more rugged, more picturesque, until at last we are startled from our quiet contemplations by the shrill barking cry of the Eagle as he sweeps proudly and defiantly from the cliffs below. The morning sun glances on the yellow feathers of his head and neck, making them glow like burnished gold, and his dark plumage shows almost black against the blue water. Flying once or twice round and round, and swooping rapidly past the face of the cliff, he surveys our unwelcome intrusion. He soon flies out to sea, probably to the distant shores of Uist, leaving us to storm his mountain home. The nest is built in the highest portion of the cliffs, where a good look-out can be obtained and where the rocks are truly terrible in their rugged grandeur. Six hundred feet above an ever-restless sea they tower, partly in sloping grassy downs, broken here and there by precipices, and partly in a beetling rock. Far down on the water Guillemots and Puffins gambol and bob about like corks, and Gulls stand motionless on the rocks. Primroses and seapinks cluster thickly on the cliffs, and in every nook and crevice the delicate spleenwort fern sends up its beautiful fronds in rare luxuriance. The Eagles' eyrie, in use for years,

is built in one of the most inaccessible parts of the cliffs—a little grass-covered recess about halfway down the precipice where the rocks overhang and form a natural roof to the nest. A careful climb of some four hundred feet brings us to within about thirty yards of the nest, which the aid of a rope lowered from above enables us to reach. The nest is a clumsy structure several feet across, wedged into the rock niche and resting on a narrow platform. It is made of heather stems and sticks, not very intricately interwoven, though very compact and solid. The cavity is somewhat shallow, and composed of dead fern leaves, dry grass, and moss, and a few tufts of green herbage. On it rest the Eaglets, clothed in white down amongst which the feathers are fast appearing. With snapping beaks they scramble to the farthest side of the nest, and there huddled together pay but little heed to our intrusion. All round the nest are abundant evidences of the care and assiduity of the parent birds—bones picked clean, fur and feathers; the remains of lambs and hares and a dead Grouse. What a grand and impressive scene is presented to our view—how wild, yet withal how beautiful! How complete the picture of rock and sea—how harmonious the surroundings with the young Eagles and their rude home! It makes us feel thankful we are ornithologists and able to realise and rightly enjoy the poetry of such a scene as this. Long may the Golden Eagle haunt the wild cliffs and glens and mountains of this rugged shore! for as long as he lives amongst them the crowning object of their beauty is ensured. A bird so closely associated with the Scotch must be spared the fate of ignominious extinction which threatens it. The lambs and fawns and Grouse the Eagles take are but a cheap price to pay for such an ornament to so wild a land. Before it be too late let the Scotch protect their national bird—the Eagle of their ancestors. Let them stay the cruel war so ruthlessly waged against this handsome bird—a war that bids fair to play its part but too

surely, and take the Eagle from their glens and their mountains for ever.

The eggs of the Golden Eagle are from one to three in number, two being the usual clutch. They vary much in colour, and generally one of the eggs in a clutch is remarkably plain; although occasionally both are marked in the same degree. They are dull white in ground colour, sometimes with the faintest possible tinge of green, spotted, blotched, and freckled with rich reddish-brown and pale violet-gray. Some eggs are almost uniform dull white without a marking of any kind, others have the blotches and spots nearly confluent round the larger end. Others are finely vermiculated and sprinkled with minute brown spots over the entire surface; and occasionally the markings are few but large, irregular, and boldly defined. They also vary considerably in size and shape, even in the same nest. The female Eagle performs most of the task of incubating the eggs, but the male will take his turn upon them. Should the female be trapped, as unfortunately is too often the case, the male will hatch the eggs and rear the young himself. Incubation commences as soon as the first egg is laid. When the young can fly, their parents hunt in company with them for a little time, but they are soon deserted and quit the neighbourhood of their birth for ever. At this time of the year Grouse and leverets form their principal food.

When nesting on inland cliffs the Golden Eagle invariably selects a place where a good look-out can be obtained, but sometimes the eyrie can be reached with little difficulty. As a rule it is built in parts of the cliff that overhang, so that it is completely inaccessible. Eagles' nests are never built close together—one pair of birds appear to take possession of a wide range of country which they regard exclusively as theirs, and from which all outsiders are banished. The saying, "A pair of Eagles to a mountain," might have been

true when the birds were common, but now a pair of Eagles have undisturbed possession of a whole range of hills, and many are the mountain districts of the north where imagination might picture an Eagle on every crag, that are as completely deserted as the lowlands of the south.

The Golden Eagle is a resident in the British Islands, but in autumn and winter he often wanders far from home. Food is often scarce when the hills are deep in snow. The Ptarmigan and the mountain hares don their white winter coat which makes them inconspicuous amongst the snow, and hard to see even by an Eagle's piercing eye. The lambs are grown too big to be mastered with impunity, and carrion is scarce. At such times the Eagle wanders lower down the hills and visits the sheltered glens and valleys, sometimes taking a meal from the poultry-yard, or playing sad havoc amongst the game.

THE WHITE-TAILED EAGLE

(*Haliaeetus albicilla*)

THE White-tailed Eagle or Sea Eagle is a much commoner bird than the preceding species, and one that is very frequently confounded with it. It may be readily distinguished by its naked tarsi, those of the Golden Eagle being feathered to the toes. Like that bird it is now an inhabitant of the wildest districts only. Persecution has driven it from the precipitous coasts and freshwater lakes of England, but in the remote Highlands it still survives, and a pair may be generally met with on most of the inland lochs, or on the bold headlands of this rockbound land. It is much more of a maritime bird than the Golden Eagle, although it is just as much at home amongst the mountains that look down into the inland lakes. To study the habits and economy of this handsome bird we must visit some of the wildest and the grandest scenery our islands can boast. We must seek him in the brown heathery solitudes of the northern mountains, and among the lonely islands that stud the sea along the wild west coast of Scotland. Broad stretches of moorland, towering rocks piled one upon the other in endless confusion, sea-girt cliffs which rise sheer from the restless waves hundreds of feet below; secluded lochs and romantic glens down which mountain torrents leap from boulder to boulder—these are the haunts of the White-tailed Eagle. In spite of the price set upon its head, and notwithstanding the

incessant persecution to which it is subjected by shepherds and gamekeepers, this handsome bird continues to hold its own, and in these wild districts does not appear to become any rarer. I have seen the heads and feet of this bird nailed in dozens to the kennel doors, in company with one or two of those of the Golden Eagle, and numbers of Ravens, Buzzards, and Peregrines. Passing sad it is to see such rare and beautiful birds destroyed so wantonly.

In this country no birds are more difficult to approach closely than the Eagles; but in Northern Africa, where man's presence bodes no danger, I have frequently passed them almost at arm's length. It is difficult therefore to examine their actions very closely without the aid of a glass. Then the birds may often be watched as they sit and sun themselves on the rock pinnacles and shelves, often with feathers puffed out, or wings half-spread and drooping. They love to bask in the sun, and often sit for hours scanning from their lofty perch the wide panorama of moor and sea and lake that spreads before them, and ever ready to sail swiftly off should prey of any kind be descried. In his flight the White-tailed Eagle very closely resembles the Golden Eagle, but perhaps his actions are a trifle more laboured and Buzzard-like. Sometimes he mounts slowly upwards in wide curves, sailing with wings almost motionless and fully expanded, and the tips of the quill feathers slightly recurved. Sometimes a pair of birds may be seen in early spring high up in the blue sky looking like specks, slowly sailing round and round far above their eyrie on the rocks below. At this season they often gambol in the air, buffet each other, and engage in various freaks of flight, uttering at intervals their shrill yelping cry. I have seen two rival birds engage in aerial combat, and the way in which they turn and twist is truly marvellous. Their powers of flight are also exhibited to perfection when they try to drive off some small Hawk, Gull, or Crow that delighted

in mobbing them. Like the Golden Eagle, the present species wanders far and wide in search of prey. Except in the pairing and breeding season, the White-tailed Eagle is for the most part a solitary bird, but each pair usually frequents the neighbourhood of its eyrie throughout the year. The young birds are the greatest wanderers. Driven from their birthplace by their parents, they often stray southwards into England and the lowlands, where they wage an incessant war on the rabbits and water-fowl.

The White-tailed Eagle's food is varied. It preys upon almost all birds and animals that its superior prowess enables it to master. It will carry off the newly-dropped weakly lambs and fawns; it chases the blue hares, rabbits, and Grouse on the moors and mountains, and is an adept at hunting down any wounded bird or animal. But so far as my own observations of this bird extend, I have found it most partial to carrion. It loves to beat lazily along the beach in quest of stranded fish or any other garbage the waves may chance to cast ashore, and in the inland districts a dead sheep or deer is a welcome prize. I once saw a White-tailed Eagle drop down on to a drowned sheep, on which a number of Crows and a few Gulls were feeding. He surveyed the dead animal for some time at a considerable height, flying round and round before he alighted on the ground a few yards away, and then leaped forward to his meal. The Crows made off a little way as he approached, and the Gulls fluttered buoyantly upwards to hover above, or alighted on the beach, patiently awaiting his departure. A shepherd whistling to his dogs on the cliffs close by alarmed him, however, and he rose into the air with a piece of flesh in his talons, leaving the Gulls and Crows in undisturbed possession. The White-tailed Eagle is said to capture living fish, something after the manner of the Osprey; but how the bird accomplishes the feat it is hard to conjecture, unless, when flying very low over the waves, he

snatches the fish basking on the surface and conveys them to land to be devoured at leisure. When carrion is scarce he has to seek for other food, and captures the Ducks and Water-fowl, stealing on them unawares. Daily he may be seen in one particular tree watching the bustling crowd of Ducks on the water, and patiently waiting in the hope that they will rise and offer an easy chance of capture.

There can be no doubt that the White-tailed Eagle pairs for life. Season after season the same nest is used, being patched up and renovated every spring. The breeding season is early, but as a rule a little later than that of the Golden Eagle. In exceptionally early years I have known its eggs to be laid by the middle of March, whilst in backward seasons they are not laid before April. The site for the nest differs a good deal, and depends greatly upon the characteristics of the bird's haunt. Where rocks are scarce and low the nest is often built in some large tree, or if rocks and trees are both absent, some small island in a quiet lake amongst the hills is selected. But the usual situation is on the stupendous cliffs, especially those which overhang the sea. I know of eyries that are absolutely inaccessible, and the birds have reigned in undisturbed possession of them for years. During the breeding season the old birds may be seen daily sailing high in air above their ancient stronghold—a fitting ornament to its rugged splendour. It may only be the witching force of fancy, but to my mind the cliffs that contain an Eagle's nest seem the grandest in the whole district, and the ones from which the best view can be obtained. Whilst standing in this White-tailed Eagle's nest, let me try and convey to the reader a little of the charm that surrounds it. Far down below are the green waters of the restless sea. On every side and towering far above our heads are the beetling cliffs, crag beyond crag, clothed with greenest herbage, and here and there broken up into grassy banks. On

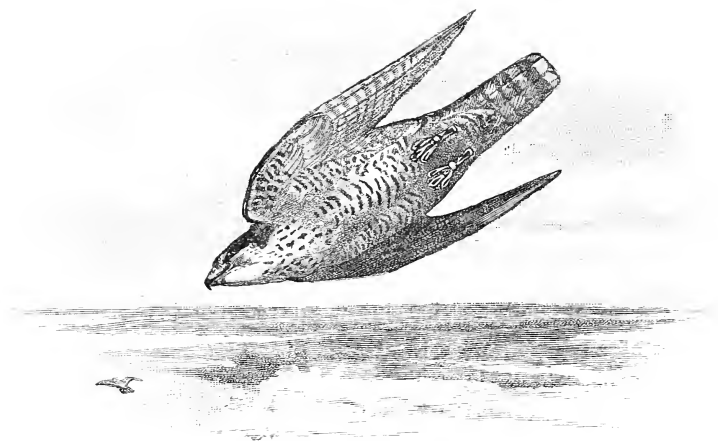
these banks the seapinks and primroses are full of bloom, lending a delicious fragrance to the bracing air. On yonder stack of rocks the male Eagle sits and barks forth defiance at our intrusion, although too timid to show his displeasure in a more marked degree. The female Eagle, too, must be included in the picture. She is high in air above our heads, ever and anon descending lower and sweeping past the face of the cliff well out of gunshot, and showing her anger by thrusting out her legs and opening her sharp talons. The ledge on which I am standing is scattered with large bones of the various fish that have been conveyed here; and just on the edge of the nest are a few Puffins' feet and an entire beak of that bird, whilst on every side are to be seen castings and droppings of the old Eagles. The nest is a bulky structure, the accumulation of years, flat in form, and about five feet across. It is made of sticks of various thicknesses, not very intricately interwoven, although firm in texture, a branch or two of heather, some of them with the leaves still green upon them, others worn and bleached, and a few pieces of seaweed. The lining is composed of grass, a few leaves of the sea-campion, a tuft or two of wool, and some bits of turf, on which the two eggs lie so temptingly.

Many nests of the White-tailed Eagle are very slight, in some cases little more than a hollow scratched out in the soft soil on some rock ledge. The eggs are almost always two in number; in some very rare instances three have been found, but usually one of them is bad. They are on an average slightly smaller than those of the Golden Eagle, from which they are readily distinguished by the absence of all colouring matter, and their much rougher texture. Both birds appear to assist in hatching the eggs, but the female performs the greatest share of the task. The sitting bird is tended carefully by its mate, and if one of the birds be destroyed, the survivor speedily finds a new companion—a peculiarity common to most raptorial birds. The young remain in the nest

until they are able to fly, a period of quite six weeks, and after that they are still tended by their parents for some time.

The White-tailed Eagle only rears one brood in the season, and if the first clutch of eggs be taken another is usually laid. I am of opinion that many White-tailed Eagles visit us every autumn from Northern Europe, and that most of the birds seen during winter in England are individuals that have left their arctic haunts as soon as food became scarce.

Let us now give a passing word to what is perhaps the rarest of our raptorial birds, the Osprey (*Pandion haliaetus*). Its numbers have so far decreased that now only one or two pairs return to their nesting sites, and these are in the wildest and most secluded portions of the Highlands. The Osprey's powerful feet and enormous claws, long wings, brown upper parts and white under parts (except the nape, which is white streaked with brown, and the upper breast, which is banded with brown), are its distinguishing characters. It is a summer migrant to Scotland, and during the two seasons of passage is often observed in England. Its food is exclusively composed of fish, which it strikes at and catches with its powerful claws. I have seen this bird plunge with amazing force into the Highland lochs in chase of fish. In many of its habits it resembles the White-tailed Eagle. It makes a bulky nest of sticks and turf, lined with grass, which is added to and repaired every season, either on the topmost branches of a pine tree, or on some ruin, especially if situated on an island. The eggs are two or three in number and remarkably beautiful, being yellowish-white, boldly blotched and spotted and marbled with deep reddish-brown, purplish-brown, or orange-red. The female hatches the eggs, the male supplying her with food. The flight of the Osprey is powerful and long sustained. It may often be seen for half an hour or more gliding to and fro through the highest air, far above the grand old forests or the wide waste of silent waters.



THE PEREGRINE FALCON

(*Falco peregrinus*)

THE Peregrine Falcon is another of our rarer birds, which, in spite of incessant persecution, still manages to hold its own, although it is only found in the wildest and most inaccessible districts. In the days of falconry the Peregrine, preserved and cherished, was the daily companion of nobles and princes; now it is nothing but an outcast, exterminated from most cultivated and inland localities, and driven to the wild fastnesses on our rockbound coasts. We generally meet with him near the stupendous cliffs tenanted by countless sea-birds, which furnish this bold Falcon with abundant food. He is a thorough bird of the open, seldom frequenting woodland districts, always preferring the moors and mountain sides, where he can swoop down with lightning speed upon the unsuspecting birds and animals. The Peregrine sometimes shows a strange partiality for houses and cities; and I have known many instances of this bird taking up his quarters in some church

tower in a noisy town, from which he sallied forth in quest of Pigeons. Few birds are safe from this bold Falcon; but should he chance to miss his mark, he seldom follows up the chase. I have seen him strike at Plovers and Ducks, which by a sudden twist have eluded his talons, and he has continued his flight, as if too dignified to return to the pursuit. It is an interesting sight to watch this graceful bird's aerial movements. I love to wait for him amongst the tall heather on the summit of the rocks, or halfway down a noble precipice rising sheer from the sea, where, unobserved, I can watch his movements with the greatest ease. How gracefully he glides through the air, or sails round and round in ever widening circles, scanning the ground below him. Then sometimes I see him dart swiftly down and alight on a rock, where he sits motionless, or turns his head suspiciously from side to side, as if half-conscious of my whereabouts. Every now and then he half-opens his wings as if about to fly, and as the shadows lengthen and darkness creeps slowly up the hill-sides, he finally goes off to his accustomed roosting-place amongst the rocks.

I often linger near the colonies of sea-fowl to watch the daring Peregrine. In some localities these birds are his favourite food. In fact, a pair of Peregrines can generally be met with in all the large colonies of sea-fowl. Often, when I have been watching the habits of the Guillemots and Puffins, this bold robber has swooped down like a bolt from the sky, and carried off one of my little favourites before I could well realise what had taken place. At his appearance the scene changes as by magic. Tumultuous uproar and confusion reign where a moment before all was quietness and peace. The birds swimming on the sea dive with the rapidity of thought, those on the rocks huddle together panic-stricken at the dread visitor's presence. One of their number leaves his little life in the air and is carried triumphantly off, and with

the Falcon's departure the terrified birds soon regain their accustomed tranquillity. It is also a noteworthy fact that the sea-birds display very little concern or alarm when the Peregrine is indulging in aerial gambols above their rocky haunts. I have often seen Puffins sitting on the cliffs, not a stone's throw from the dread destroyer, and the Terns and Gulls unheeding fly to and fro before his perching-place on the cliffs. But he heeds them not—his hunger is already satisfied. The Peregrine is generally a very silent bird, and rarely utters a sound except when its nest is menaced by danger; then it is noisy enough, and flies anxiously to and fro uttering a loud chattering cry.

The Peregrine feeds on those birds and animals which its great speed and strength enable it to capture. It rarely molests small birds, leaving them for the Merlin and the Sparrow-hawk, and generally confines its attention to such species as Grouse, Pigeons, small Gulls, Guillemots, Puffins, Ducks, and Plovers. This fare is varied by an occasional leveret or barn-door fowl, and quantities of rabbits. I have never known the Peregrine eat carrion, and, so far as my observations extend, it always feeds on birds and animals which it has caught itself. The indigestible portions of its food are cast up in pellets, and the head and big bones of its victims are generally discarded. As is the case with most birds of prey, the Peregrine has some particular spot to which it conveys its captives, where it can eat them undisturbed. These places are strewn with feathers, bones, and fur, and are often used by the same bird for years. In the autumn months Peregrines follow the great armies of migrating birds to prey upon the weakly, the weary, and the unwary. In this manner they often wander far from their usual haunts, and frequently take up their abode on low-lying shores, where the wildfowl congregate. Except in the breeding season the Peregrine is for the most part a solitary bird.

The Peregrine is an early breeder, and in my opinion is a life-paired species. For years and years the same nesting-site is tenanted, and certain localities for time out of mind have been known to possess their pair of birds. As if conscious of the persecution it receives from man, the Peregrine generally contrives to make its nest in places almost inaccessible. The pair of Peregrines, for instance, that frequent the Bass Rock have chosen an admirable situation in the lofty cliffs. Here they evidently possess several nesting-places, using them alternately. When I visited this nest in May, the birds had selected a dangerous bit of cliff several hundred feet above the water. As soon as I got near the top of the cliff, the female dashed rapidly out from the nest, uttering her usual chattering cry of alarm, which soon brought the cock bird into view. As I was lowered into the nest the scene around was most impressive. Far down below, in the dizzy awful depths, I could see the Guillemots and Puffins gamboling in the water at the base of the cliffs, looking like specks of foam; whilst the Gannets in thousands were flying to and fro, ever and anon passing by me almost within arm's length, their beautiful white plumage glistening in the sunlight, and their harsh grating cries adding to the charm of the scene. As I descended, big masses of rock gave way and went crashing down, striking the water with a noise like thunder. Far up in the air above the two old Peregrines were sailing round and round, the female occasionally sweeping past the face of the cliff, so near that I could see the sparkle of her bright black eye, and hear the rustle of her wings. The male was much more wary, and content to watch my actions at a distance. I found the nest on a narrow ledge of the cliffs, which just allowed me sufficient standing-room. It was a simple structure, merely a little hollow scratched out in the scanty soil, in which were a few bits of dead vegetation, probably

the accumulation of chance. Round the nest were quantities of bones and feathers, a few pellets, and the legs and feet of a Puffin, which had evidently only just been eaten. The nest contained a single young bird, covered with gray down, which allowed me to examine it minutely without the least show of resistance.

Another nest which I visited a little earlier in the year was in a long range of cliffs that rose sheer from the water six hundred feet. This also was a shallow hole in the soil on the rocks, about nine inches across. In it were a few bits of dry heather, and one or two scraps of down, probably from the parent birds. The behaviour of the old birds at this nest was not quite so demonstrative, although they kept up a chorus of angry cries. It contained three eggs, and from their condition I should infer that the female in some cases begins to sit as soon as the first egg is laid. Another nest which I well remember was on a stupendous inland "storr" rock, in which a pair of Ravens had dwelt for years, and where numerous Jackdaws and Starlings also reared their young. The Peregrine's nest was built in a narrow fissure, which extended three parts of the way up the cliff. In this case no nest was made, except a little hollow in the ground. From near the nest a grand look-out could be obtained over a wide expanse of moor and mountain scenery. Year after year the Peregrines bred in this noble rock, in spite of the fact that either their young or their eggs were taken every season. It was a most interesting sight to watch the old birds shoot down from the highest air with half-closed wings and enter the fissure, sometimes with a Pigeon or a Grouse in their talons.

The eggs of the Peregrine are three or four in number, and in colour precisely resemble those of the well-known Kestrel. They vary a good deal in size and shape, but are not easily confused with those of any other British species.

Only one brood is reared in the year ; but if the first clutch of eggs is taken, in some cases another lot is laid. When the young are hatched, the old birds become even more daring and eager in their pursuit of birds. As they grow up, the old birds are taxed to the utmost in finding food for them. As soon as they can fly, their parents generally desert them and drive them away from their birthplace for ever. These young birds wander about a good deal, and often visit localities in which old birds are rarely if ever seen.

Before leaving the Birds of Prey I intend briefly to notice a few other species in this important family, more especially to enable the young naturalist to identify them, should they chance to fall in his way. The first of these is the Hobby (*Falco subbuteo*), a summer visitor to the British Islands, though slowly decreasing in numbers through incessant persecution. It is a miniature Peregrine in appearance, and resembles that bold bird in many of its habits. It is, in fact, the Peregrine of the woodlands, and loves to frequent the dense forests and tree-grown country, where it wages a relentless war on the small birds, mice, and coleopterous insects. It is a late breeder, rearing its young when the small birds and young game are plentiful. Like the Kestrel it is no nest-builder, but takes possession of a deserted nest of a Crow or Magpie, in which it lays four or five eggs, similar to those of the Kestrel in colour and size, but a little browner.

The second species is the Merlin (*Falco aesalon*), which in summer frequents the upland heaths and mountain moorlands, and in winter the lower country, resembling in this respect the Meadow Pipit and the Twite. It is a true Falcon, full of pluck and vigorous dash in pursuit of its prey, and most persistently attached to the haunts of its choice. I am of opinion that many Merlins visit this country every winter from Northern Europe and Iceland.

Its principal food is small birds, though it will attack and capture Pigeons, and like all the smaller Hawks it catches insects. It breeds on the ground, returning to the same spot every season, making its scanty nest among the heather and the bilberry wires, and laying five eggs, which, with the exception of being a trifle browner, closely resemble those of the Kestrel. The Merlin is about the size of the Kestrel, but is readily distinguished by its slate-blue upper parts and rufous nape.

Another bird that breeds sparingly in our largest forests and highest ocean cliffs is the Common Buzzard (*Buteo vulgaris*). Its large size, brown plumage, barred tail, and short bare tarsi, distinguish it from the other British species. In our islands it is a resident, but shifts its ground considerably according to season, wandering far from its usual haunts as soon as the young are safely reared. I have often met with this handsome bird in the pine woods of the north, and taken its nest in them. It is a flat, bulky structure made of sticks, and the shallow cavity containing the eggs is often strewn with a flake or two of down. It also nests on cliffs both inland and on the coast. It is an early breeder, its eggs being laid towards the end of April. They are white in ground colour, spotted and blotched with reddish-brown. The Common Buzzard is a very sluggish bird, beating slowly along the hillsides and over the open ground in quest of mice and frogs; and it will not refuse to make a meal on carrion. I do not think it ever molests birds, and is comparatively harmless in the game coverts.

The Honey Buzzard (*Pernis apivorus*), distinguished from all other birds of prey by its feathered lores (the space between the eye and the base of the bill), is a summer visitor still to the New Forest, where its eggs are obtained almost every season. It is a fitting ornament to this delightful wooded scenery, and never fails to win our admiration as it

sails proudly on above the undulating forest—one of the last of our rarest birds. The Honey Buzzard takes possession of a deserted nest of a Crow or Magpie, often re-lining the structure with green leaves. Here it lays two or three remarkably handsome eggs, cream in ground colour, boldly blotched and spotted with rich purplish-brown, sometimes concealing all trace of the light ground. They are round in form, smaller than those of the Common Buzzard, and singularly waxy in texture. The Honey Buzzard does not molest birds as a rule, but feeds principally on the larvæ of wasps, which it digs out of the ground with its claws. It also eats the wasps and bees themselves, and catches mice, frogs, lizards, and the larger beetles. It leaves its haunts early in autumn, and the young birds and their parents occasionally migrate in company.

The Marsh Harrier (*Circus aeruginosus*), as its name implies, is another rare visitor to the lowlands, and most frequently observed in the marshes and swamps of the eastern counties. It loves the broad expanse of fens, over which it may be seen leisurely beating in quest of the birds and small animals on which it feeds. Backwards and forwards it flies in a systematic manner searching every foot of ground, dropping lightly down upon the unsuspecting creatures which form its favourite food. It is passionately fond of eggs, and searches most diligently for the nests of the various birds that breed in its haunts. It makes its bulky nest of reeds and dry grass upon the ground, usually under the shelter of a bush or tuft of herbage, in which it lays from four to six eggs. These are uniform pale bluish-green, and rarely possess any markings. The Marsh Harrier is distinguished by its long wings and tail, short slender legs, rufous white head and nape, and dark reddish-brown other plumage.

Our last species is the Hen Harrier (*Circus cyaneus*), distinguished by its small size, pale-gray breast, and upper

plumage, black wings, and white underparts. It is still a summer visitor to some of the wildest and most secluded mountain districts. It loves the lonely moors, and delights to beat along the hillsides. It feeds on small birds, mice, frogs, and insects, and also robs of its contents any nest (eggs or nestlings) it may chance to meet with in its wanderings. I have taken the Hen Harrier's nest amongst the tallest heather on the hillsides in Skye. It is rather a bulky structure, almost exclusively made of heather stems, and lined with a little fine grass. The eggs are laid towards the end of May, are four or five in number, and resemble those of the Marsh Harrier, but are a little smaller. Many nests of this species are trodden underfoot by sheep and cattle. The Hen Harrier is remarkably graceful in its movements, and is very conspicuous as it beats up and down the moors in quest of food. Like the Merlin it returns year after year to its old nesting-place, but a fresh nest is made every season, so far as my experience of this species extends.

THE WOOD OWL

(*Strix aluco*)

THE Tawny Owl, or Wood Owl, as it is much more aptly called, is an inhabitant of the grand old forests and extensive woods. Persecution is slowly but surely exterminating this fine bird; but owing to his seclusive habits and love for the deepest and least frequented woods, he is able in many districts to bid defiance to his human enemies. He loves the woods which are full of ancient timber, the grand old oaks whose gnarled and hollow trunks furnish him with a quiet retreat; he is found in the extensive pine woods, and sometimes takes up his quarters in an old ruin or a cave in the rocks, provided the country round about them is well covered with trees. You cannot easily mistake his whereabouts, nor readily confuse him with any other Owl. His loud, full, and wide-sounding *hoo-hoo-hoo* is unmistakable—a cry which is apt to startle our reverie in the forests when night is stealing softly over them.

The Wood Owl is a thorough bird of night, and never wanders abroad until the sun has dropped behind the western horizon. Occasionally a half-dazed bird may be met with in the bright sunlight, but he has been disturbed at his roosting-place. I have also known him come out in the twilight on the dark wintery afternoons, and in late autumn when the evening mists have been unusually dense. The habits of such a bird as the Wood Owl are rather difficult

to observe, and we must wait until the moon is nearly at the full before we stroll into the woods to watch the actions of this interesting little bird of night. The woods at night! How little does the stay-at-home naturalist know of the romantic charm which creeps over the woods at dusk! When the shadows cast by the tall trees grow longer and blacker, and surrounding objects lose distinctness of outline, the real carnival of the woods begins. Shy and timid creatures gain confidence as the darkness spreads; the rustle of their movements on the carpet of dead leaves and dry fern betrays their whereabouts, and the soft gentle flap of broad wings amongst the branches overhead informs you that the night birds are also moving. The pale moon is now rising above the trees, lighting up the open glades, and glinting on the stems of the silver birches. Let us step a little closer into the shadow of this brave old oak; the various wild creatures around us are acutely sensitive, and the least movement on our part may send them bounding or flying startled away. See, the rabbits are feeding in the open; and every now and then the Nightjar poises above the trees. Sounds which can only be interpreted by one well skilled in the language of the woods and fields are to be heard on every side. The field-mice and shrews are burrowing under the dead leaves; that louder rustling is a mole; those leaps and bounds amongst the fern are made by a weasel probably following the spoor of one of the rabbits gamboling yonder. Various creatures leave the hollow trees amongst which we are standing. These old trees are a quiet refuge for many shy and timid creatures. Bats frequent them; Starlings roost in them; Stock Doves and Jackdaws breed in them; and they are the favourite resort of the Wood Owl.

That great oak yonder, hollow as a watch-tower, is a Wood Owl's castle. We may expect the old birds every moment. Hark! that is their hoot borne softly on the night wind from

a distant part of the forest. It is answered by another hoot, startlingly near and close ; and the bird alights on a branch of the oak opposite which we are standing. Noiselessly as he came, his sudden dropping on the branch shook off several of the big brown acorns, and they bounce down on the short turf almost at our feet. He sits quietly on the branch a moment ; then drops almost as lightly and silently as a shadow to the ground. He has probably caught a mouse or a frog which was skipping about in the moonbeams on the green velvety sward. His mate now comes upon the scene and perches on the next tree. Loud and clear she hoots, and then floats off into the gloom. Backwards and forwards the big-looking Owls pass to and fro ; sometimes absent for half an hour, sometimes merely hawking over the glades near at hand. Were you to linger here all night, the Owls and other creatures would be sure to interest you ; but in the gray light of early morning the various sounds grow less and less frequent, and the night birds and animals have retired to their retreats before the first Thrush or Robin has essayed to utter a chirp of welcome to the opening day.

During the short light-nights near the summer solstice we have good opportunities of observing the Wood Owl, especially when it is bringing up its brood and pays many visits to its nest in the course of a few hours. It does not call so frequently now ; but the young birds are noisy enough in the hollow trees. The Wood Owl preys upon various creatures that haunt the woods and the fields adjoining them. Now and then he surprises a belated bird on the hedgerows, but his principal food is mice and frogs. He also catches various nocturnal beetles, and occasionally takes a fish as it floats on the surface of the moonlit water. I have known this bird to visit the farmyards near the woods, and he repeatedly haunts the stubbles for mice. Young rabbits and leverets are sometimes caught, and perhaps a weakly or wounded

bird falls a victim now and then; but the Wood Owl is a valuable friend to man, and the senseless practice of shooting and trapping this harmless bird cannot be too severely condemned.

The Wood Owl, in my opinion, pairs for life, and the same nesting-site is tenanted year after year. In some cases the birds only frequent their nesting-place during the breeding season, haunting for the remainder of the year some dense clump of ivy or group of thick fir trees in the daytime. It is a rather early breeder, often laying its eggs in the beginning of April, and even in exceptionally forward seasons by the last week in March. The nest, if a mere hollow is worthy of such a name, is often in the decayed trunks of the forest trees, especially in oaks and elms; but occasionally an old nest of a Magpie or Crow is selected, or even the bare ground at the foot of a pine tree under the dark sweeping branches. This latter locality is chosen in districts where large timber is scarce. Holes in rocks are sometimes used as a nesting-place. The soft powdered wood at the bottom of the holes, or the dry scanty soil accumulated in the crevices of the rocks, or the pine needles on the ground under the trees, form the Wood Owl's only nest; and on this it lays three or four big, round, shining white eggs, which cannot be confused with those of any other species of British Owl. As soon as the first egg is laid the bird begins to sit, so that we generally find eggs either in various stages of incubation, or young birds in various degrees of growth. The young are noisy little creatures, and very often betray their whereabouts by their loud clicking cries. The old birds keep them well supplied with food, and as soon as they can hunt for themselves they are abandoned, although, so far as I can determine, only one brood is reared in the season.

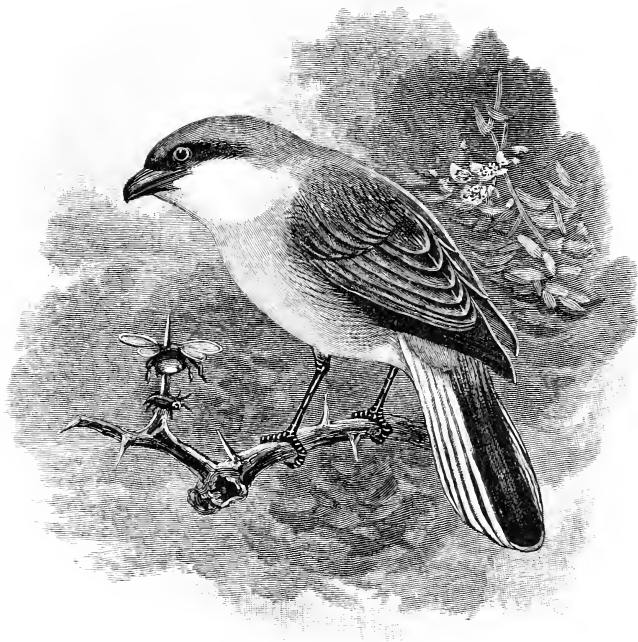
In autumn, when the cares of bringing up a family are over, the Wood Owls become much more wandering in their

habits. They fly farther afield, and hunt districts often at considerable distances from their daily retreats. The stubbles are now the attraction; and on more than one occasion I have seen this fine bird perched on the "stooks" of corn during the bright September nights. I have also sometimes flushed it from the standing corn in the early morning; and its actions on the wing are curiously erratic and unsteady, as if the poor bird were bewildered for the moment at being aroused so suddenly from its sleep.

Two more Owls, though only breeding sparingly in our country, have an undisputed claim to be classed with "our rarer birds." The first of these is the Long-eared Owl (*Strix otus*), distinguished by its conspicuous ear-tufts and transverse bars of pale brown on the under parts. In its habits and economy it very closely resembles its cousin, the Tawny Owl, but loves to frequent the gloomy pine woods in preference to deciduous trees. I have noticed with pleasure the gradual increase of this beautiful bird in districts where fir and spruce planting has been extensively pursued. In this country the Long-eared Owl is a resident, but its numbers are increased in autumn by birds from more northern lands, and I have known an occasional example to be caught in the flight nets on the Lincolnshire marshes. Its eggs are usually laid in the deserted nest of some other bird, particularly of a Crow, a Magpie, or a Wood Pigeon, and a favourite locality is the old "drey" of a squirrel. Five or six white eggs are laid, often very early in the year, but generally by the end of March or beginning of April.

The Short-eared Owl (*Strix brachyotus*) is best known as a winter bird in our islands, but a few still breed in the fastnesses of the fens. It is distinguished by its short ear-tufts and longitudinal streaks on the under parts. There are several interesting features in the life-history of this pretty Owl. In the first place, its regular migrations to this country

in autumn are very marked. It arrives in flocks in October, and continues more or less sociable with its species throughout the winter. I have seen great numbers of this interesting bird caught in the flight nets round the Wash, where it is known to the fishermen as the "Woodcock Owl," from its habit of appearing there with that bird. Short-eared Owls migrate at night, and evidently fly just above the water. Unlike most other Owls this bird often flies by day, and is frequently seen hunting the fields for food even in the brightest sunshine. In its flight, food, and many of its habits it resembles its congeners, but prefers the open country to woods or buildings. Unlike most other British Owls, this bird rears its young on the ground, often in the most exposed situations. May is its nesting-season. Its nest, little more than a hollow lined with a few bits of dead and withered herbage, is placed either amongst the heather or the rushes and other aquatic vegetation on the marshes. It lays five or six pure white eggs, very similar to those of the preceding species.



THE RED-BACKED SHRIKE

(*Lanius collurio*)

THE ornithologist in pursuing his studies will be sure to be impressed constantly by the fact that many birds frequent particular districts, and are rarely seen away from them. Country which may seem suitable in every way for the requirements of certain species, for some complex reason is deserted by them. The first step towards becoming a practical ornithologist is to know where and when to find the objects you wish to observe. Constant observation will ultimately ensure proficiency. The Red-backed Shrike is one of those birds singularly local in its distribution and most capricious in its choice of a

haunt. It is a bird of the rich well-cultivated lowlands, shunning the moors and the mountains of the north. It loves to frequent the broad rough meadows separated by tall hedges which are allowed to grow uncut, and where there is a sprinkling of stunted bushes on which it loves to perch Flycatcher-like and wait for its prey. You may often meet with it by the country roadside, especially where a broad strip of short grass extends on either side, studded here and there with thorn bushes and occasional clumps of brambles and briars. Another favourite haunt of this handsome bird is on the open common, where it frequents the small trees; and I frequently observe it on the outskirts of woods and occasionally on the downs, where its perching-place is often a mass of chalk, a gatepost, or a stone wall.

The Red-backed Shrike is a summer visitor to this country, arriving late in spring, generally not before the beginning of May, when the small birds are plentiful and the insects and mice have come out of their long winter's trance. Its arrival may readily be noticed, for this bird is one of the most conspicuous, that thrusts itself before our notice on every occasion we may chance to wander through its accustomed haunts. Perched on the topmost twig of a hedgerow, or on the summit of a solitary bush or stump, or on the palings near the wood or round the water-hole where the cattle drink in the pastures, he may be seen for a long distance; and as he is by no means a shy bird, if a wary one, we are enabled to watch his actions with ease. In many of his habits he is precisely like a big Flycatcher. Waiting patiently on his exposed perch, looking from side to side, every now and then jerking and half-expanding his tail, he watches for the passing beetles and bees that drone lazily by, and flutters into the air to capture them. Sometimes a Bunting, a Whinchat, or a Tit ventures too near, and the hungry Shrike pounces on them unawares, and beats the poor little bird to death with his hard,

hooked beak. I have often watched this bold bird flutter down into the long grass and fasten upon a shrew or field-mouse, a grasshopper or a small lizard. He sometimes drops down to the ground and searches amongst dung or on newly-ploughed land for beetles; and not unfrequently he robs a nest of the half-fledged young. The Red-backed Shrike is almost as great a terror to the little birds as the Sparrow-hawk, and doubly dangerous, for they are apt to approach him quite unconscious of harm, or allow him to fly up to them when they are busy feeding on the stubbles. His wings, however, are not sufficiently powerful to enable him to fly his victims down like a Hawk; he comes upon them unawares, or chases the wounded, the weakly, and the young. Occasionally he may be seen to poise for a moment above the hedges or the brambles and long grass, hovering like a Kestrel; but his usual flight is very drooping and resembles that of the Green Woodpecker.

Perhaps the most interesting peculiarity in the habits of the Red-backed Shrike is its custom of conveying most of its captures to some thorn bush, on the spines of which it impales them, and devours them at leisure. Each bird will have some particular spot which serves it as a kind of larder, to which it conveys small birds, beetles, and mice. The Shrike's feet are not sufficiently powerful to hold its victims while it tears them to pieces with its sharp-hooked bill; hence it spits them on the thorns, which serve as a vice. I have seen small birds hanging with the head through a forked twig; and many objects are spitted which are never eaten. On the other hand, I have reason to believe that the Shrike draws upon his store when food becomes temporarily scarce.

The alarm-note of the Red-backed Shrike, once heard, can never be mistaken for that of any other species. It puts one most in mind of the *sac-sac* of the Fieldfare, but is

clearer and more piercing. This note is not quite so harsh when the bird is calling to its mate. In late spring the male bird utters its simple song—a few short pleasing notes, by no means unmusical, and in full harmony with the surroundings.

The Red-backed Shrike is a somewhat late breeder. You rarely find its nest before the middle or third week in May. It is very probable that this bird pairs for life. Its nest may be found year after year in one chosen spot, and certain districts are generally tenanted every season by their pair of birds. These birds appear to migrate in pairs, and are always seen in pairs upon their arrival in this country. The Red-backed Shrike displays little caution in building its nest, often placing it in the most exposed situations, near a much frequented footpath, or high up in the tall, windy, and by no means thick hedges. In this particular it resembles the Missel-Thrush; yet singularly enough its nest very often escapes detection. The nest is a somewhat bulky structure, built in a fork of the hedges, or amongst brambles and briars, or in a dense wayside bush. Trees the bird appears to have no taste for. It is made externally of the dry stems of various plants often with the flowers attached, dead grass, roots, and moss, and lined sparingly with finer roots, horsehair, and sometimes a scrap or two of wool and vegetable down. The eggs are five or six in number, and vary considerably in size, shape, and markings. For the sake of clearness we may divide them into four very distinct types. The first of these is pure white or creamy white, speckled and spotted with rich reddish-brown and with larger blotches of violet-gray. The second is pale green, spotted and speckled with olive-brown and paler markings of violet-gray. The third is pale buff, spotted with pale olive-brown and indistinct markings of paler brown and violet-gray. The fourth is salmon-pink, spotted and blotched with

brownish-red of varying shades, pale markings of violet-gray, and one or two dark brown streaks. The character of the markings differs almost as considerably. On the usual type of egg most of the spots are congregated in an irregular zone round the larger end; on others they are spread uniformly over the entire surface; whilst on some they are very minute and numerous, or very few and distributed in bold blotches. It is not easy to confuse the eggs of the Red-backed Shrike with those of any other British bird; and a carefully selected series of them forms one of the most attractive drawers in the egg cabinet.

Only one brood is reared in the season, and as soon as the young can leave the nest they follow their parents from bush to bush, attracting attention by their noisy cries and conspicuous habits. Like all late migrants the Red-backed Shrike leaves this country in early autumn, when September paints the woods and hedges with the first tints of autumnal gold, for its winter quarters in the south of Africa. The old birds migrate in spring in company, and depart in the same manner accompanied by their broods. The young males are not nearly so handsome in their appearance as the gaily attired adult male-bird, being brown and dingy like the female, and in addition the young of both sexes have the upper parts barred with brown, and the pale eye-stripe very indistinctly defined.

THE NIGHTINGALE

(*Erithacus lusciniæ*)

THE affinity of this soberly dressed little bird with the brightly attired Robin is not at all generally known or suspected. Yet when the young naturalist comes to study the habits of the two species he will find much in common between them. True, the sweet-voiced Nightingale is a summer visitor to this country, whilst the Robin is a resident species ; yet we know the same anomaly exists between two such closely related birds as the Song Thrush and the Red-wing. The Nightingale must certainly be classed with our rarer birds, as it is to be found in only a limited portion of the British Islands. This favoured district is principally in the south-east of England, and even there the Nightingale is somewhat capricious in its choice of a haunt. The Nightingale is one of spring's first harbingers, and arrives in its old summer haunts about the middle of April. I have known it visit this country as early as the fifth of that month, a bird killing itself on that day by flying against a lighthouse on the south coast. It takes the bird about a fortnight to reach its northern haunts, so that we in South Yorkshire do not meet with it as a rule before the first few days of May. The Nightingale migrates by day as well as by night ; and I have met with this little bird in the middle of the Mediterranean steadily flying north over the trackless waves in company with Turtle Doves. On the 21st of April 1882 a Nightingale

flew on board the steamer *Abd-el-Kader* as we were steaming between Marseilles and the African coast, and I watched it tamely alight on the back of a sleeping soldier. In spite of the Bird Preservation Acts the Nightingale is harassed incessantly by bird-catchers on its arrival in this country. Out of the hundreds of birds that are still caught here in spring but few survive their captivity long. When the cock bird has found a mate it is rarely he lives in confinement, soon pining away ; and Nightingales caught in the autumn are said by the bird-catchers to be extremely difficult to tame.

As I previously stated, the Nightingale is very peculiar in selecting a haunt, and shuns many districts altogether, which, as far as we can see, are eminently suited to its requirements. In this country it loves to frequent woods and coppices, especially where there is a good growth of underwood. It likes those small woods where the hazel bushes grow densely, and the brambles and briars in thick masses fringe the tiny brooks. It may often be seen flitting across the open spaces in the woods, and is frequently flushed from the dense vegetation near streams, or in the marshy corners of the plantations. It does not show much preference for hedges ; like the Wood Wren it is a bird of the woodlands. Soon after their arrival and before pairing has taken place, numbers of Nightingales may be met with in one small wood. I have seen such localities literally swarming with this species, almost every bush containing its sweet songster trying to out-sing all birds within hearing.

The Nightingale's song is associated with the pleasantest days in the whole year. He sings his best when Nature is acquiring her freshest vigour under the warm beams of a May-day sun. It is when the woods and hedges look their greenest and their fairest, when the hawthorns are as fleecy mountains of glittering whiteness, and the glades are carpeted

with bluebells and anemones, that the wild rich song of the Nightingale seems most eloquent of life and joy. During all the hours of daylight he sits in some secluded corner of the cool green woods, and sings his rich and plaintive music at intervals ; and in the hours of darkness, when the fields and groves are fast asleep, we catch his melancholy melody as it is borne hither and thither on the night air. Where the birds are at all numerous nothing can equal the beauty of this woodland concert. First one bird and then another bursts forth into rapturous voice, here and there and everywhere from the dark woods and thickets. What pen can do justice to the song of the Nightingale ? Half an hour's stroll into the woods after sundown will introduce his melody to your notice in all its beauty, and accomplish in a moment what pages of description would fail to do. Perhaps the song of this bird has been praised too highly. Its romantic habit of warbling at night when the woods are still and rivals scarce has no doubt gained for its song a large amount of eulogy from poets and dreamers and novelists ; nevertheless we have no other singing-bird in this country whose voice possesses the same rich quality of tone, variety, and compass. It should here be remarked that the Nightingale is by no means the only songster that warbles at night. The Sedge Warbler, the Grasshopper Warbler, and the Thrush repeatedly do so ; and during the exceptionally short nights near the summer solstice I have frequently heard many other species indulging in this habit. The Nightingale begins to sing soon after his arrival in this country, and continues to do so right through the months of April and May. In June the song is heard less frequently, and is finally hushed in the autumnal moult.

In many of its habits the Nightingale very closely resembles the Robin. Like that bird it obtains most of its food on the ground, hopping about with head and tail erect, its

large bright eye ever on the look-out for danger. At the least alarm it hurries off into the cover, from which it rarely wanders far. Its flight is not very powerful and much like that of a Robin. When flying before you the bird bears a very close resemblance to a female Redstart, its tail showing out very distinctly when fully expanded. By sitting quietly in the woods well concealed from view you may often see the Nightingale hop down out of the underwood on to the dead leaves or the footpath and search about for food. It repeatedly flicks its wings and tail, and bobs its head, just like a Robin. If disturbed it hurries back to its close retreat, from which may be heard its harsh croaking note of alarm, something like that of the Whitethroat, but louder. Its usual call-note is a long-drawn plaintive *weet*, very similar to the Robin's, and it also has a habit of snapping its bill repeatedly if much disturbed. Its food consists principally of small worms and grubs, which it finds amongst the loose soil under the dead leaves, by the side of streams, and in soft marshy places. It also feeds on ants and other insects and their larvæ, and in fruit time eats considerable quantities of currants, raspberries, and wild strawberries. I believe its young are chiefly reared on the larvæ of moths and butterflies, and on ants and their eggs.

Like the Robin, the Nightingale shows a strong affection for certain haunts, and appears to return to them unerringly every season. During the pairing time in April it is rather pugnacious and drives away any rivals that may chance to invade its own particular haunt. Nest-building begins about the first week in May, but in backward seasons I have known it be delayed until nearly the middle of the month. The nest in nine cases out of ten is made on the ground, in situations very similar to those selected by the Robin—amongst the rank vegetation that carpets the woods, in a chink of some old gnarled root, on the steep banks, or deep down in the

recesses of a hedge-bottom near the copse. Sometimes it is built amongst the masses of fallen leaves which the winds of March have drifted against the tree trunks, and matted in the briars; and perhaps least frequently of all amongst the dark and glossy foliage of the ivy growing over a rough wall. When built on the ground, a little hole is scraped out first, and then the bulky nest is commenced. Externally it is made of dry grass, bits of dry rush, moss, and dead leaves, generally of the oak. This is lined with finer grass, roots, and a little horsehair. The Nightingale's eggs possess certain well-marked characteristics which prevent them being confused with those of any other native species. They vary from four to six in number, and range from dark olive-brown to bluish-green. The ground colour of the dark olive-brown variety is bluish-green where it can be seen through the rich surface markings of brown; whilst the bluish-green variety is only very faintly mottled with reddish-brown. The two types are produced by the greater or less abundance of the surface colour; and on some eggs this is confined to a circular confluent mass on the large end, whilst occasionally it is to be seen on the small end. The Nightingale is a close sitter, often allowing herself to be caught on the nest. Her sober brown colours are in strict harmony with surrounding tints, and she sits quietly on her charge as if conscious of her safety. The eggs themselves are eminently protective in colour, resembling very closely the browns and greens of the objects round the nest. Only one brood is reared in the season, and so far as my observations extend, the young birds are deserted by their parents as soon as they are able to shift for themselves.

The Nightingale is silent for weeks before it takes its departure, and it skulks close during the moult. It leaves us somewhat early in autumn, and I rarely see it in its usual haunts after the beginning of September.

Another of our rarer birds here claims a passing notice, and that is the charming little Pied Flycatcher (*Muscicapa atricapilla*). It is one of the rarest and the most local of our summer birds of passage. Unlike its well-known congener, the Spotted Flycatcher, the present species is an early migrant, and returns to its old haunts by the end of April. I have had many opportunities of studying the habits of this interesting bird, both in North Africa, where it is specially common, and in the wooded hill districts of Yorkshire. In the former country I met with it both in the oases of the Sahara, as well as in the Arab gardens high up the solitudes of the Aures Mountains. In England it loves the birch coppices near the mountain streams, especially where old and decaying timber is abundant; and in all situations its conspicuous dress of black and white make its identification easy. Its habits are similar to those of its ally. It sits on the branches waiting for the insects to pass, and then flutters into the air to catch them, returning to the old favourite perch. It is by no means shy, but wary and restless enough. Unlike the Spotted Flycatcher, which sings but rarely, the present species is a fairly good musician and warbles incessantly, especially in early summer. I am of opinion that it pairs for life, as every year the same nesting-place is frequented. It breeds in holes of trees and rocks, precisely like the Redstart, making a nest of dry grass, moss, wool, hair, and feathers, in which it lays six or eight eggs. They are pale blue, devoid of markings, and closely resemble those of the Redstart. Only one brood is reared in the year, and young and old usually keep together and migrate in company. In Africa this species is constantly to be seen in company with the Spotted Flycatcher, but in Great Britain the haunts of the two species are considerably different—one bird loving the wilderness, the other cultivated localities and the habitation of man.

THE REED WARBLER

(*Acrocephalus arundinaceus*)

THE Reed Warbler's range in this country is very similar to that of the Nightingale ; it is a southern and eastern species, frequenting the lowlands by the banks of the large rivers and canals and in the fens. As its name implies, it is a bird of the reeds and the sedges. It frequents the willow thickets by the riverside, the osier beds in the still backwaters, the reeds that fringe the margins of drains and ditches, ponds, and broads, and even the dense underwood by the side of streams. The Reed Warbler is a spring visitor to this country, arriving in its old haunts late in April or early in May, according to the state of the season, and when the reeds which are its harbour of refuge are sufficiently high to afford it shelter. Few birds are more shy and retiring in their habits than the Reed Warbler. He delights to skulk in the reeds and willows, only letting the observer get a casual glimpse of him as he flits across the open water from one fringe of reeds to the other, or when he runs mouse-like up a tall bending stem to take a peep at the busy world. Rarely is he driven from his reedy covers, and only for a moment does he remain in full view. If you wish to observe him more closely, you must conceal yourself amongst the reeds and await his appearance. On the dull windy days he keeps very close and does not sing much ; but on the bright June mornings, and in the calm warm stillness of the summer evenings he gambols

among the reeds, and now and then you may see him clinging to a bending stem warbling lustily, his little orange mouth being very conspicuous as he opens his bill, and his throat puffed out with song. The Reed Warbler is another species that sings at night. During the short hours of darkness at midsummer the reed beds are resonant with his song. This song has nothing very striking about it; in fact it is somewhat monotonous, though possessing considerable variety and sweetness. Sometimes the observer may wander along the reed-fringed banks of a sluggish stream which he knows to be a favourite haunt of the Reed Warbler, but not a bird is to be seen or heard. A stone or a stick thrown amongst the aquatic vegetation will generally arouse the reed-birds into activity. Here and there the tall stems of the reeds are seen to bend and quiver as the little birds hop from stalk to stalk, and soon a burst of song as if in defiance rings clearly out from the dense cover. Now and then we catch a hasty glimpse of the sombre little songster, as he flits along over the feathery heads of the waving reeds, sometimes singing as he goes. Numbers of Reed Warblers inhabit the same reed beds, but each pair of birds appear to keep to themselves, and drive off any intruder from their own particular corner. Few birds are more active, and it is surprising with what agility they can pass from reed to reed, threading the dense cover with ease, and running up and down the slender stems more like mice than birds. In localities where the birds are numerous, one sings against the other with amazing pertinacity, but the little skulking musicians are far more often heard than seen.

In the low-lying counties, where narrow dykes take the place of hedgerows, the Reed Warbler is exceptionally abundant. It is no uncommon thing to find half a dozen nests in a hundred yards or so of dyke; but the birds are not at all gregarious, and appear to keep to their own particular spots.

It is the same amongst the willow trees and osier beds ; and what is worthy of remark is, that in places where the reeds or bushes are scattered no birds are to be met with. They love the densest situations, and can rarely be surprised in the open. I do not remember to have ever once seen a Reed Warbler on the ground, or a couple of yards away from its favourite cover. We cannot help admiring, too, how the sombre brown dress of this little creature harmonises with the decayed yellow leaves and the brown stems of the reeds, or how beautifully his body is formed for gliding quickly between the network of quivering stems. The breeding season of the Reed Warbler depends a good deal on the state of the weather. If the summer is an early one, the birds begin by the end of May ; but if, as is often the case, a long spell of cold weather sets in about this time, the operations are suspended or postponed till the first half of June. Pairing appears to take place soon after the birds' arrival in this country, and the various nesting-sites are selected and appropriated with much noisy quarrelling and scolding. The nest of this bird is by no means difficult to find. All we want is to be sure that the birds frequent the locality, and a little patience will soon enable us to discover their remarkably pretty homes. The nests are made at various heights from the water, sometimes only a few inches, at others as many feet. Three or four reeds are selected as supports for the nest, the walls of which are woven round them ; and when in the willows or osiers two or three twigs are utilised in a similar fashion. The nest is made principally of dry sedgy grass stalks, broad dead leaves of the reeds, and rootlets. In some nests a little moss, or a scrap or two of vegetable down is mixed with the other materials. The lining is almost exclusively composed of very fine dry roots. Some nests are very elongated, and have a considerable foundation for the cup which contains the eggs ; in others much of this lower structure is dispensed with. The old birds

become very anxious and garrulous when their nest is menaced by danger, and flit from reed to reed, or twig to twig, uttering a series of harsh scolding cries, which sound very like those used by the Whitethroat on similar occasions. The nests are often built and left for several days before the first egg is laid—a peculiarity which I have often remarked in the Song Thrush and the Chaffinch.

The eggs of the Reed Warbler are four or five in number, very pale blue in ground colour, spotted and blotched with greenish-brown, and paler markings of violet-gray. Some eggs are slightly streaked with very dark brown, and on some the spots are large and confluent, on others small and evenly dispersed over most of the surface. It is worthy of remark how very distinct the eggs of the British Warblers are. In each group the eggs almost without exception are peculiar. Thus in the Willow Warblers we have pure white eggs spotted with reddish-brown; in the Tree Warblers the eggs are salmon-pink, spotted with purplish-brown; in the Grasshopper Warblers the finely powdered brown markings and their general pinky appearance are characteristic of them alone; whilst in the Reed Warblers greens and olive-browns are the predominant colours. In the true Warblers—as, for instance, the Blackcap and the Whitethroats—there is not quite so much uniformity, probably because the species in this group are comparatively of much greater antiquity than those in the preceding ones. It seems to me that the very distinct variations in the eggs of this latter group show a wide degree of differentiation of many of the species; but in the allied groups, although the species have become fairly defined, the eggs have not yet had time to vary, and consequently a certain type of egg runs through each respective group. What part these variations play in the economy of the birds still remains to be discovered; but I think it is very clear that these well-marked types of

eggs prove a not very remote evolution of the birds in each of these great groups severally from a common parent form.

The Reed Warbler only rears one brood in the season, but if its first nest is destroyed another is made and a fresh clutch of eggs deposited. The food of this little bird is composed very largely of insects which it catches by fluttering after them as they fly over the water, or when they are at rest on the stems of the reeds and willow twigs. In autumn it may possibly feed on fruit, but I do not think it does so to any great extent, being too much averse to leaving its reedy cover. The young birds are fed on larvæ of various kinds. In some situations where reed beds are scarce, and the birds live amongst the dense undergrowth by the pond-side, a visit to the gardens adjoining is more readily undertaken. The Reed Warbler quits his haunts long before the winds of late autumn break down the reeds and the tall herbage begins to decay. Silently and stealthily he skulks away, and he is safe in Africa almost before we miss him from his haunts in this country.

The researches of recent years have established the claim of the Marsh Warbler (*Acrocephalus palustris*) to be included among our rarer birds. This little Warbler is most interesting to British ornithologists; and there can scarcely be a doubt that every season it is confused with its near ally, the Reed Warbler, whose habits we have just been studying. We have here a remarkable instance of two perfectly distinct species of birds resembling each other most closely in external appearance, but differing widely in their geographical distribution, habits, song, and the colour of their eggs. A similar but not quite so marked an instance is to be found in the Song Thrush and the Redwing.

The Marsh Warbler has hitherto only been observed in the southern counties of England, but doubtless farther

research will increase the area of its distribution. In external appearance it only differs from the Reed Warbler in the colour of the rump, which is olive-brown; in the latter and commoner species this is russet-brown. It is a much better songster than the Reed Warbler, its voice being more varied, richer, and almost as sweet as the strain of the Nightingale. It is also much less skulking in its habits, and instead of reed beds loves to frequent the dense vegetation by the water-side—brambles, brushwood, alders, and willows, where the ground below them is clothed with luxuriant herbage. The Marsh Warbler arrives in England late in spring, and leaves us early in autumn—May and August being its “traveling months.” Its nest is attached to stems of tall plants, such as nettles and meadow-sweet, never to the reeds or over water. It is made of dry grass, scraps of moss and vegetable fibre, and lined with horsehair. The eggs, five or six in number, are greenish-blue or greenish-white in ground colour, spotted and blotched with olive-brown and violet-gray, and occasionally with dark brown. The food of the Marsh Warbler is almost exclusively composed of insects.

THE GRASSHOPPER WARBLER AND DARTFORD WARBLER

(*Locustella locustella* and *Sylvia provincialis*)

THE Grasshopper Warbler, though pretty generally distributed throughout this country, must rank as one of our rarer birds and one whose habits are by no means easy to observe. It has obtained its well merited and singularly applicable name from its peculiar note, which sounds very similar to that of a grasshopper. We have not a bird in our English woods and fields more skulking in its habits than the Grasshopper Warbler. Were it not for its singular song, it would generally escape the notice of even the most careful observers. It skulks back again to its summer quarters in this country towards the latter end of April, not reaching its northern haunts before the beginning of May, and soon afterwards announces its arrival by uttering its peculiar song. It may be met with in almost every variety of country, provided the ground is well covered with brushwood and herbage. I have often heard its song on the moors, miles away from woods, where it frequents the tall heather and the clumps of thorn trees which here and there stud the waste. It inhabits woods and plantations where the underwood is dense, and shows an equal preference for the hedgerows which are choked with a rank growth of coarse grass, briar, and bramble. I have found it specially common on waste pieces of ground where the country lanes widen out, and the open space is

covered with a thick growth of gorse and bramble and dog-rose, with a carpet of coarse rank grass. It is also specially fond of frequenting the dense vegetation of all kinds that luxuriantly covers the banks of brooks. In all these situations I have often lingered to catch a glimpse of this shy little creature, chasing him up and down the cover, backwards and forwards, directed to him solely by his song, and only obtaining the briefest possible glimpse of him, as, mouse-like, he glided through the long grass, or hopped from twig to twig with amazing speed. If fairly beaten out of his retreat he seems like one bewildered, and flutters aimlessly about, glad to hide in the first cover that may afford him shelter. At rare intervals he may be seen to run nimbly up a tall stem of herbage, or explore the higher branches of the bushes; but at the least alarm he drops like a stone into the thicket below, and no artifice will make him leave it.

The note of this bird once heard can never be forgotten. It is one long tremulous trill, louder than the grasshopper's, but equally as monotonous. This sibilant song often lasts without cessation for two or three minutes together, now sounding startlingly near or very remote, as the bird changes its position in the thick cover—loud and close when he is up in the branches, low and remote when down in the grass. It may be heard at all hours of the day and night; but it becomes specially loud and continuous in the dusk of the summer evenings. If hunted from one place to another, the bird appears to show very little uneasiness and is not readily frightened. The song ceases for a moment when you approach the bushes where the little skulker is concealed, but it bursts out again directly afterwards in another part of the cover; and so the bird may be hunted or followed from place to place, perhaps without once showing itself.

The food of the Grasshopper Warbler is composed chiefly of insects and their larvæ; but in autumn this fare is occasionally varied by fruits of different kinds.

The Grasshopper Warbler breeds late, its eggs seldom being laid before the end of May. As may readily be supposed, the nest is artfully concealed amongst the vegetation in which the bird delights to skulk. A favourite situation is in amongst the rank grass through which brambles and rose-briars twine, or in the weedy bottom of a dense hedge-row. The nest is also made in the dead grass at the bottom of the gorse bushes, and amongst ferns and bluebells and long grass on the banks of a woodland stream. In most cases a natural arch of grass bends over the nest, almost if not entirely concealing it from view. The nest is made of broad leaves of dead grasses, intermixed with moss and dry leaves, and lined with fine grass and rootlets. The eggs are from four to six in number, pinkish-white in ground colour, profusely spotted and sprinkled with reddish-brown and pale gray. On some eggs the markings are mostly collected in a zone round the large end; on others a few streaks are observable, whilst in many the pale gray markings predominate. In spite of what has been said to the contrary, I am of opinion that the Grasshopper Warbler only rears one brood in the season. Eggs may be found quite late in June, or even in the beginning of July, but they are doubtless the produce of birds whose earlier efforts were unfortunate. When the nest is approached the sitting bird runs off like a mouse, always preferring to creep through the vegetation rather than take wing. She soon returns to her charge again, and stealthily reaches her nest unheard and unseen. It is difficult to state the exact time when this skulking little creature returns to his winter home in the south, but I for my part never see him after the beginning of September.

The habits of birds are puzzling in the extreme. A strong robust bird like the Red-backed Shrike leaves this country for no apparent reason when autumn days foretell the early approach of winter; whilst the delicate and frail little

Dartford Warbler remains in his favourite quarters and braves all the rigours of a northern winter almost with impunity. Curiously enough, this singular little bird is nowhere migratory, and this would lead one to the conclusion that it is a species which is striving to increase its northern range. Unfortunately for the poor bird it makes little progress in this direction, for an unusually severe winter or prolonged spell of frost well-nigh exterminates it, and years elapse before it occurs again in its wonted numbers. British ornithologists may justly feel proud of this little bird, for it was first made known to science by an English naturalist, from a specimen shot near Dartford in Kent—from which town it received its trivial name.

The Dartford Warbler is a bird of the commons and the heaths, where extensive coverts of gorse and masses of briar and bramble are to be found. It is another little skulking species, but not quite so much so as the Grasshopper Warbler. It rarely takes wing, and still more rarely indulges in a long flight. The furze bushes are its favourite retreat; but in very severe weather I have flushed it from the low scrub on the beach, and occasionally from under the broad leaves of the turnips. The little "furze Wren" is perhaps most interesting in the spring, when the gorse coverts glow like burnished gold in the bright May sunshine. Then he may be seen skipping about the prickly branches of the gorse, running up to the very summit of the bushes to warble his sweet little song, then down again into the dense mass of vegetation, to reappear in quite another part of the cover. Where the birds are at all common, several may often be seen fluttering above the gorse at the same moment, and their peculiar and unmistakable note sounds loudly on every side.

As the Dartford Warbler lives almost exclusively on insects, it is a very active restless little creature, and is

incessantly hopping and creeping about in search of its food. Now you see the prickly branches quiver near the top of the bush, and catch a momentary glimpse of the dark-looking bird; then almost instantly it drops down again into the very roots of the gorse, or flutters upwards into the air to catch a passing fly. In autumn it pays short and timid visits to the fruit trees in the farmers' gardens near the coverts, and hunts about the adjoining moors for bilberries and other ground fruits. Its young are largely fed on caterpillars, as well as on the perfect insect.

The breeding season of the Dartford Warbler begins about the middle of April, the eggs usually not being laid before the last week in that month. The nest is cunningly concealed amongst the thickest portions of the coverts, not very high up in the branches, but amongst the dead twigs and long grass at the foot of the bushes. It is a flimsy structure, very like the Whitethroat's in general appearance, made of dead grass stalks, bits of withered furze, and scraps of moss, lined with finer stalks and sometimes a few hairs. It is not quite so deep as the Whitethroat's, and if anything a trifle more bulky. The eggs are four or five in number, and so closely resemble those of the Common Whitethroat that it is with difficulty they can be distinguished. As a rule they are a trifle smaller, and the dark markings are a little more intense. As in those of the Whitethroat, the spots often form a zone round the large end. The female sits closely, and I have sometimes stood within a few feet of the nest without her showing much alarm. Few nests are more difficult to find, and the only way of ensuring success is to carefully watch the old birds, who rarely fail to disclose their secret if patiently observed. Two broods may be reared in the season, but such is by no means generally the case.



THE NUTHATCH

(*Sitta carolinensis*)

THIS engaging active little bird resembles the Titmouse very closely in its habits, and frequents similar haunts. Like those ever wandering little creatures, the Tits, the Nuthatch visits all kinds of scenery, provided trees are to be found, for on them it seeks the greater part of its food. We often meet with it in the decaying trees in the last remaining remnants of the olden forests, where amongst the gnarled stems and rotten branches it finds a plentiful supply of food. In the

mellow days of autumn it wanders to the filbert orchards to prey upon the nuts, and is frequently seen in the beechwoods, where the mast is a never failing attraction. It is not by any means a gregarious bird, although a social one, and in autumn and winter a solitary Nuthatch frequently attaches itself to a party of Titmice, accompanying them in their endless rambles through the woods in quest of food. When the frost is severe, and the wintery landscape looks more than usually dreary, an odd Nuthatch often visits the trees near man's habitation, and picks up a meal with far more homely birds.

It is in winter that the actions of the Nuthatch may be studied to best advantage. Then the leafless trees afford it little shelter, and you may stand and watch its erratic movements on the trunks and large branches. The sharp *whit* of the Nuthatch is one of the few sounds that break the stillness of the wintery woods, and the little bird itself is generally soon met with amongst the trees, even in the midst of snow and frost. Many times have I observed this active little bird creeping fly-like over the bark, its gray and chestnut plumage contrasting strongly with the newly fallen snow.

There is something about the first heavy fall of snow specially attractive and interesting to the naturalist. The whole landscape bears a strange, novel look; it is something fresh; and what is more, bird-life in the snow is an interesting study. Stroll abroad this wintery morning, before the first freshness of the snowstorm has passed away. Note the dreamy quietness which prevails along the hedgerows, almost hidden in places by the drift; the stillness amongst the trees or by the stream. Nature seems in tranquil repose after the strife and tempest of the previous night, and everything is changed by the sudden transformation of the storm. The broad-leaved laurels and dark yews and hollies bend under their heavy pall of dazzling whiteness. Here and there on

the rugged trunks of the forest trees the snow has lodged in the rifts of the bark, and every branch and twig of the hedgerows is clothed in a fair frostwork of silver filagree. Drops of water glisten like diamonds in the yellow sunlight as they tremble on the branches; and every now and then one is startled by a mass of snow falling from the trees. Animals, the shyest of the shy, that once betrayed themselves by rustling amongst the carpet of autumn leaves, now steal silently away, their presence only revealed by their tracks left upon the snow. The rabbits have been gamboling here; there a hare has passed hurriedly along to her warm "seat" in the hedgerow. Yonder a stoat has skipped from his asylum in the stoneheap in search of his breakfast; whilst on every side are to be seen the little footprints of birds. The soft fleecy snow is everywhere; but still we may be sure of finding the Nuthatch in the woods.

In a manner precisely similar to a Titmouse, the Nuthatch explores the chinks and crevices of the bark, now running from side to side, then upwards in spiral course, anon downwards with head pointing to the ground, for he is equally at home when climbing with his tail or his head uppermost. You will observe that he seldom or never supports himself with his tail feathers as the Woodpeckers and Creepers do. He is a restless little creature, by no means shy, yet sufficiently wary to be far more often heard than seen. I have often observed the Nuthatch explore buds and twigs for insects and larvæ, as well as the big branches and trunks.

The food of the Nuthatch is largely composed of insects and grubs, but in autumn nuts of various kinds, acorns, fir-cones, and the stones of various fruits and berries. It is very clever at breaking open the hard shell of nuts, generally carrying them off to some favourite chink or crevice in a tree or post, where by diligent hammering with its strong beak it soon cracks them. The ground below soon gets thickly

strewn with the shells and husks which bear witness to the little bird's industry. It may sometimes be seen on the ground searching for fallen nuts and beech-mast, or to pick up a nut that it may have dropped when busy cracking it.

The Nuthatch, I am inclined to believe, pairs for life, and yearly returns to its old nesting-place, showing great attachment to it, and only forsaking it after continual and incessant disturbance. It is a somewhat early breeder, putting its little house in order by the third week in April. It makes its nest in a hole in a tree or stump, at varying heights from the ground and at different depths. Sometimes, but rarely, a hole in a wall is selected. The entrance to the hole is generally too large for the Nuthatches, who neatly plaster up the opening with mud, and thus reduce the aperture to the size they need. In most cases a hole is selected ready made, but the birds frequently enlarge one till it is suited to their requirements, or even bore into the soft decaying wood. At the bottom of the hole a slight nest is formed of dry grass, and mayhap a few dead leaves; but sometimes even this is dispensed with, and the eggs lie on a few bits of bark flake, or even on the finely-powdered wood-dust. The eggs are from five to eight in number, pure white in ground colour, spotted and blotched with reddish-brown and gray. They vary considerably in size, shape, and markings, but the eggs of a clutch are usually pretty uniform in these respects. Some eggs are minutely speckled over the entire surface; others are boldly blotched as well as finely marked, whilst on some exceptionally handsome varieties the reddish-brown spots and blotches are confined to a broad zone or circular patch on the end of the egg. You may remove the eggs of the Nuthatch, but others will be laid, and I have on several occasions taken clutch after clutch from the same hole. The Nuthatch may frequently rear more than one brood in the year, and generally lays again if the first lot of eggs be destroyed.

The young are fed assiduously by both parents on an insect diet, much the same as Titmice. Very often the broods disband long before the advent of winter, although the old birds may be seen in company throughout the year. The Nuthatch does not possess any song, but in the vernal year, when under sexual excitement, its usual call-note is somewhat modulated into a kind of twitter. In its flight it very closely resembles the Great Tit, and on the ground it is capable of hopping with ease.

THE MARSH TITMOUSE

(*Parus palustris*)

THE names of some birds are remarkably inappropriate and apt to lead the young naturalist astray. That of the Marsh Titmouse is a good example. We should infer from its name that the bird is an inhabitant of the marshes, the reeds, and the swamps; but in reality it frequents much the same localities as the other Titmice—the woods and hedges and trees in almost every kind of country. It is perhaps more a bird of the wild than its congeners, and does not frequent the neighbourhood of houses so much. Its habits are very similar to those of the other Titmice. Like them it is constantly in motion, exploring every little twig and branch and bud, throwing itself into all manner of grotesque attitudes in its busy search for food. To my observation the Marsh Titmouse explores hedges and low bushes and brushwood much more than the other members of this family do. It may instantly be recognised by its peculiar cry of *tay-tay-tay*, a note unlike that of any other British species. In the early spring this note is variously modulated into two syllables, and then almost resembles a song. The bird seldom stays long in one locality, except during the breeding season, and sometimes numbers make their appearance in a district, stay a day or so, and then just as suddenly depart.

Insects form the principal food of the Marsh Titmouse, and it is most diligent in its search for them, picking out the larvæ from the chinks of the bark and the branches, and

often flitting into the air to catch an insect passing by. But this fare is varied with small seeds of many kinds ; and in the late summer and autumn months it visits the different garden trees for their fruit. Like the Rook, I have often seen the Marsh Titmouse picking the bones and other refuse of the slaughter-house. In winter when insect food is somewhat scarce I often see the Marsh Titmouse visit the orchards and pick at the stray apples and pears that have escaped the gales and still remain on the trees. Old walls are often visited, especially those which are overgrown with ivy and other vegetation, where insect-life lurks in great plenty. Sometimes it pays a hurried visit to the farmyard and seeks about for food amongst the heaps of old timber which are piled up ready for placing under the hay- and corn- stacks ; but wherever it is met with the observer will find that it is by far the shyest and the most wary of all the Titmice.

The Marsh Titmouse is a rather late breeder. The Blue Titmouse and the Great Titmouse have already laid their eggs before the present species begins to build its nest. May is generally half over before we can be certain of finding its eggs. Its nest is usually made in a hole of the timber—a knothole being a favourite place. I have repeatedly found it in a rotten stump in the hedgerows, where the wood broke away like tinder soon revealing the bird and its treasures. Sometimes a hole in the pollard willow by the pond-side is chosen, less frequently a cranny in the old “dry” wall. It does not often make a hole for itself unless the wood is very soft. The nest is placed at varying depths. I have known it a yard down an old stump, whilst very often it is only a few inches from the opening. It is made somewhat loosely of bits of dry grass, quantities of moss, wool, and feathers, and in some cases a little hair. The eggs are from six to ten in number. The nest which I alluded to above in the old stump contained a clutch of the latter number. They are white spotted and speckled with reddish-brown, generally most thickly

on the larger end. Eggs of the Marsh Titmouse so closely resemble those of the Coal Titmouse and the Blue Titmouse that they cannot safely be distinguished. The only sure way is carefully to identify the old birds at or on the nest before taking the eggs. The Marsh Titmouse sits close, and often allows you to break away the soft wood which contains her home and expose it fully to view without making the least attempt to escape. The old birds are extremely careful not to betray the whereabouts of their nest, often hopping about for hours without once visiting it if they know they are being watched. When the hand is inserted in the nest-hole the sitting-bird commences to hiss in quite an alarming way, and it will bite and snap vigorously at the fingers when it is taken from its eggs. But one brood is reared in the year, although other eggs will be laid in most cases if the first lot is taken. I have known these birds go on laying egg after egg in the same hole just as regularly as they were removed. The Blue Titmouse and the Starling will do the same.

The broods of Marsh Titmice and their parents do not appear to keep company during the winter. As far as I can learn, the little party breaks up when the young birds can manage for themselves, and I generally see this species either solitary, in pairs, or less frequently in company with Coal Titmice and even with Nuthatches.

It should be mentioned that the Marsh Titmouse—in fact all the British species of this family of birds are residents in this country. Our indigenous birds may be slightly increased in numbers by wandering Titmice from more northern lands, driven southwards by inclement weather, but the immigration is unimportant and scarcely discernible. It is in winter that the habits of the shy Marsh Titmouse are best observed; in summer when the leaves are on the trees he is often passed by unnoticed.

The Crested Titmouse (*Parus cristatus*) is the rarest of the British Titmice, and only breeds in one or two favoured

districts of Scotland—in Ross, Inverness, Banff, and Aberdeen. It is distinguished by its conspicuous black streaked with white frontal crest, otherwise it somewhat resembles the Marsh Tit. It is a bird of the pine woods, and seldom wanders far from that tree. In its habits, food, mode of nesting, and call-note it differs but slightly from its congeners. In autumn and winter the Crested Tit sometimes wanders far from home, and on one solitary occasion I have seen it as far south as Derbyshire. Its eggs, five to seven in number, are white spotted and blotched with brownish-red, and are as a rule more richly and boldly marked than those of any other British species of Titmouse.

So long as the wide expanse of fenland remains in its primitive seclusion, the Bearded Titmouse (*Panurus biarmicus*) will probably be ranked as one of our rarer birds. It is almost exclusively confined to the fens and broads—the forests of reeds that stretch monotonously far and wide over this tract of country. No other British bird can be confused with the Bearded Titmouse—its slate-gray head, rufous brown and delicate pink plumage, black moustachial lines, and long tail, being unfailing marks of distinction. In its habits it puts you in mind of the Reed Warbler. Like that bird it flits about among the reeds, crosses the waterways in dipping flight, and every now and then utters its Tit-like notes. It probably pairs for life like many of the Titmice. The nest is usually placed under a tuft of sedge or other aquatic herbage, and is made of dry grass and bits of reeds, sometimes lined with the flowers of the reeds. The eggs, five or six in number, are yellowish-white, streaked and speckled with irregular lines of dark brown. They differ considerably from the eggs of any other British bird. Two broods are often reared in the season; and at the approach of winter the birds collect into little parties and wander far and wide in quest of food. This is composed of insects in summer, and seeds of various kinds in winter.

THE ST. KILDA WREN

(*Troglodytes hirtensis*)

IT is a singular fact in the ornithology of the British Islands that so few of the birds found resident in them are peculiar to the country, and one that seems conclusively to prove that the separation of these islands from the continent of Europe has, geologically speaking, been comparatively recent. When the ornithologist begins to study his favourite science more deeply, and especially in relation to its bearing on the origin of species, he will find much to interest him. He will be able satisfactorily to determine the history of many species, and clearly to trace the descent of many local forms and isolated races from the parent stock. In this country his examples of the evolution of species by the agency of isolation are extremely few, but quite sufficient to illustrate very forcibly this law of the origin of species. One of the most interesting examples is to be found in the Red Grouse, a bird which is only found in the British Islands. This bird is very closely related to the Willow Grouse, a species that lives as close to this country as Scandinavia, and which, like the Ptarmigan, assumes a snow-white winter plumage. Indeed, the Red Grouse is nothing more than an island form of the Willow Grouse, its chief point of distinction being its constant brown dress. In accounting for the presence of the Red Grouse in this country, we can either presume that the range of the Willow Grouse became discontinuous when our islands were

separated from the Continent, or we can suppose that they were peopled by a migrating flock of Willow Grouse that were compelled by severity of climate and scarcity of food to retire southwards. In either case their isolation effectually preserved the variations which arose through their change of country and climate, and the Red Grouse was developed into an island species from the colony of imprisoned Willow Grouse, or its common ancestor.

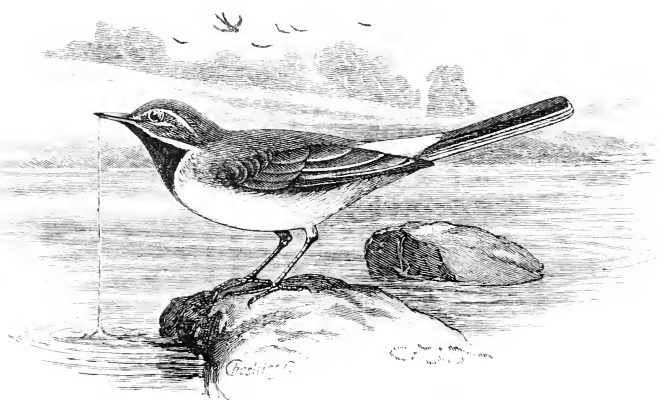
I was fortunate enough to discover some four years ago another very similar instance to the foregoing, only a trifle more local in its character. During a visit which I paid to the little group of remote islands known collectively as St. Kilda, I shot an example of a Wren which I found to be very common there. I noticed its presence almost as soon as I landed on these lonely islets. My attention was directed to it more specially because it differed in many important particulars from the little Wren with which we are all so familiar. In the first place, it is larger, and its feet are much less slender than those of the Common Wren ; secondly, it is paler in colour, and has the upper plumage much more distinctly barred ; and thirdly, its habits are different. This little bird, though closely allied to the Common Wren and the Wrens living in Norway and the Faroe Islands, is still very distinct from them. It has been isolated from its companions so long on St. Kilda that the differences which have been developed through climatic and other causes have finally become constant characters, precisely as in the case of the Red Grouse.

But very few land-birds live in St. Kilda, and of these the little Wren is perhaps the only constant resident. It never leaves the islands ; summer and winter its cheery little song may be heard from all parts of the rocks. The Wheatear comes to St. Kilda in spring, and stays to rear its young ; the Starling breeds here, curiously enough in holes in the

ground as well as in the rocks; the Hooded Crow is common, but in severe weather often visits the distant mainland; the Tree Sparrow also breeds in the holes of the rough walls; and the Twite, the Meadow Pipit, and the Rock Pipit are fairly common; but all are more or less migratory. It is most interesting to find such a delicate little bird living on these remote ocean rocks, where not a bush or a tree of any description is to be found. With us the Wren loves the well-wooded districts, and is rarely seen far from the cover of hedges and thickets; but in St. Kilda it has had to modify its habits considerably, and has developed into what we may most aptly describe as a Rock Wren. Long residence amongst the rocks has strengthened its feet, just as the constant use of our own limbs will develop them. St. Kilda and the adjacent islets are all rocks and stones, clothed with luxuriant turf, amongst which primroses and other simple flowers bloom plentifully, and on the cliffs, sorrel, campion, and other plants grow luxuriantly. On the hillsides the natives build numbers of rough hovels or "cleats," made of boulders and roofed with turf, in which fodder and fuel are stored, and the sheep and cows find shelter during rough weather. The St. Kilda Wren loves to run in and out of the rough walls of these hovels, often perching on a projecting stone to warble forth its loud and merry song. This song, to my ears, sounds louder, clearer, and more powerful than that of the Common Wren; and its call-notes are louder and harsher. It hops about with the same pert and engaging ways, constantly bobbing its head, and carrying its tail erect. It is by no means shy, and I have often watched it feeding its young within a few yards of where I was standing. It also loves to frequent the rocks and big stones on the beach; and I have often flushed it from the sides of the steep precipices, on which tens of thousands of sea-birds were rearing their young. Its principal food is insects, which it finds in the nooks and crannies into

which it is constantly running. I have seen it catch the spiders in the crevices of the walls, and sometimes pursue an insect as it flew by.

Like the Common Wren, the St. Kilda Wren most probably pairs for life. Year after year it frequents a chosen spot in which to build its home; but a new nest is made every season. It begins building by the end of April or early in May, and the nest is very similar to that of the Common Wren. It is often made in a crevice of the rocks or a hole in a wall, or in a heap of stones. One nest I found within a few yards of high-water mark in a broken wall; but most frequently it is placed inside one of the rough hovels, generally near the roof. The nest is domed and beautifully made. It is composed almost entirely of moss, profusely lined with feathers and a quantity of hair, some of which latter material is pulled from the Puffin snares in the cliffs. Round the entrance, especially below it, a number of grass stalks are deftly woven, probably to strengthen that part of the structure which is subject to most wear and tear. The eggs are six in number, pure white, profusely spotted, especially round the large end, with brownish-red and a few paler markings of grayish-brown. Some eggs are almost spotless white; in others the colouring matter is congregated in a circular mass at the end. They are a little larger than those of the Common Wren, but otherwise very closely resemble them. Probably this bird rears two broods in the season, and the young are deserted as soon as they can forage for themselves. It is possible that the Wrens inhabiting the Outer Hebrides may belong to this species, as I am not aware that birds from this locality have been examined by any competent naturalist.



THE GRAY WAGTAIL

(*Motacilla sulphurea*)

IN summer almost every mountain trout-stream is the haunt of the charming little Gray Wagtail, a bird remarkable for the quiet beauty of its dress and the singular gracefulness of its form. It loves the streams in their wildest moods, far up the hillsides where the Dippers build their nests amongst the big boulders of rock, and where the banks are fringed with mountain ash and alder trees. Less frequently you may meet with it on slower running reaches of the stream, or on the banks of brooks near to mill-dams, and about weirs and sluices. It is a much more wary bird than the Pied or Yellow Wagtails, but cannot be called very shy, provided due caution is exercised. It is generally first observed as it rises from the side of the water, or from a rock or stone in the middle of the stream. Like all the other Wagtails, its flight is drooping and rarely long sustained. It seldom goes far when flushed, perching on another rock or up in the branches of the trees a little way ahead, where, with its long tail beating

time to its sharp call-note of *chiz-it*, it warily watches your movements.

There is something about the Gray Wagtail singularly in harmony with the roaring stream ; its actions are so graceful, and it lends life to those districts where birds are not particularly plentiful. A habit of the Gray Wagtail which the observer will not fail to notice is its perching in trees. It is more of a tree bird than any other Wagtail, and may be seen repeatedly flying up into the alders, where it is as much at home amongst the branches as on the stones. I have often watched this charming little bird running daintily along the broad horizontal limbs of the trees near the stream, and have occasionally seen it perch on the low bushes by the water-side.

Although the Gray Wagtail is a resident in this country throughout the year, it changes its place of abode with the season. In spring and summer it lives on the upland waters, but at the approach of winter it comes lower down the valleys and into the more cultivated districts, often following the course of the river until it reaches the sea, where it may sometimes be observed catching flies on the beach. During winter the Gray Wagtail often keeps in little parties, probably the birds of the previous season and their parents. These parties are occasionally joined by one or two Pied Wagtails ; but as the Gray Wagtails are seldom found far from running water, they are most frequently seen by themselves. In winter the Gray Wagtail loses much of its summer wariness, and in hard weather comes quite close to houses : I have often seen it on the banks of a river in the heart of a busy town. No matter how severe the weather may be, we never find the Gray Wagtail on ploughed fields or pastures. If the stream freezes the bird seeks out a more congenial haunt elsewhere, returning when the frost is gone. It is much attached to its haunts—in summer we see the same birds back again on

certain parts of the mountain stream, and in winter they unerringly return to their old quarters.

The little parties of Gray Wagtails that frequent the lowland streams in winter disband at the first sign of spring's approach. By the end of March they have separated into pairs, and retired to spend their honeymoon on the banks of the bright purling mountain streams. But the warm April sunshine has burst the buds on the alder trees, and the pale green fronds of the bracken are slowly uncurling, ere the Gray Wagtail seeks out a site by the stream for its simple little nest. This is seldom, if ever, built far from the water, and in many cases but a few inches from it. A favourite place is under some piece of overhanging rock on the sloping bank amongst tall grass and other herbage. It is sometimes concealed under a large stone, half-buried in bramble and fern, or amongst a mass of drifted rubbish brought down by the stream during the winter floods. Less frequently it is built on a low stump close to the water. The nest is very similar to those of the other Wagtails, being carefully if loosely put together. The outside is almost entirely composed of dry roots and bits of coarse grass; the inside is lined with finer roots and a thick bed of hair or feathers. In nests which are lined with feathers, but little if any hair is used; and in those which are lined with hair, feathers are seldom seen. Hair is most frequently employed, being the easiest to obtain, as masses of it can generally be found clinging to posts and tree trunks where the cattle come to drink or rub themselves. Year after year the Gray Wagtail returns to its old nesting-place, and makes its new home a few feet away from that of the previous season even if it is frequently disturbed. We may thus infer that the birds pair for life. The eggs are from four to six in number, and vary considerably in coloration, although those in the same nest are generally pretty uniform in tint. They vary from greenish-brown to

yellowish-brown in ground colour, mottled and spotted with darker brown. On some eggs a few nearly black streaks occur on the larger end. The Gray Wagtail in some cases rears two broods in the year, but this habit is not universal, and I believe is very often the result of the first clutch of eggs having been destroyed. Both birds assist in the duties of incubation, and the sitting-bird is often fed on the nest by its mate. The young birds very often run out of the nest before they can fly, and it is a pretty sight to watch the old birds and their brood. If an intruder disturbs the family circle the old birds keep up a rapid chorus of alarm-notes, running along the ground and flitting from rock to rock, or perching in the branches overhead. The nestlings may sometimes be seen sitting on a stone in the middle of the water waiting for the flies which their parents catch for them on the banks. Such a scene speaks eloquently of peace, and forms a picture dear to the heart of him who loves Nature and her works.

As soon as the young Wagtails can fly, the family party is apt to stray from the neighbourhood of the nest, going farther down the stream. The food of the Gray Wagtail is almost exclusively composed of insects, small beetles and flies being preferred. The bird also eats small mollusks, and I have taken tiny seeds from its stomach during the winter months. It may often be seen wading through the shallow water when in search of food, and is very fond of washing itself. As a musician the Gray Wagtail is not very distinguished, but its little song is in full harmony with the scenes it inhabits, and forms a welcome variety to the murmuring of the stream. Its song is short, and often uttered as the bird is floating for a moment in mid-air. It is a simple little strain, and puts you in mind of the notes of the Swallow; but it is not heard very often, and only in spring and early summer.

As a breeding species the White Wagtail (*Motacilla alba*) is doubtless very often overlooked in the British Islands, and

I therefore call the attention of field naturalists to this interesting species. It is readily distinguished from the well-known Pied Wagtail by its slate-gray upper plumage. In the places it frequents, in its habits, nesting economy, colour of the eggs, flight, song, and call-notes, it closely resembles its common ally. The White Wagtail is really the continental representative of the Pied Wagtail, which, with the exception of South Norway, Holland, and the north-west of France, is confined to the British Islands during the breeding season.

THE ROCK PIPIT

(*Anthus obscurus*)

WHEREVER the coast is rocky and there is some little beach left at high water, we may almost be sure of meeting with the Rock Pipit. No part of the coast-line is too dreary or too wild and lonely for the Rock Pipit, and its monotonous chirp may be heard from the rocks at all seasons of the year. In addition to the mainland there are few rocky islets indeed that do not contain this sober-looking little bird. I have seen him repeatedly on the Bass Rock ; he is common on the Ferne Islands ; I have taken his nest on the wild islets of the Hebrides, and met with him at St. Kilda. Everywhere his habits are much the same. He is sure to intrude himself upon your notice before you have been long in his haunt. He is a restless little creature, and flits before you in short flights from rock to rock, allowing you to approach him within a few yards ; but if repeatedly alarmed or fired at, he often rises into the air for some distance, and flies about in true Pipit style, wavering and uncertain, now going some distance out to sea, then returning to the land and perching perhaps halfway up the cliffs, or on a big stone close to the flowing tide. Although by no means gregarious in summer, you may meet with many pairs of Rock Pipits along a short stretch of coast or on the small islands. The food of this bird is largely composed of insects, for which it searches amongst the rocks and masses of seaweed left high and dry on the

beach. A small black fly which abounds on the wide expanses of "bladder wrack" at low water is an especial object of the Rock Pipit's quest; and it searches about on the sandy bits of shore and along the line of drift for anything suited to its taste. Many insects are caught whilst the bird is fluttering in the air; and I have seen it in the fishermen's gardens and potato patches searching for small worms and grubs. During autumn and winter it eats seeds of various kinds, principally of those weeds and herbs that grow on the waste ground near the shore and on the cliffs.

It is in the genial springtime that the Rock Pipit becomes most interesting. Early in the vernal year the flocks of Rock Pipits break up into pairs, and shortly afterwards the males are full of song. There is nothing very imposing about this little Pipit's refrain, but it relieves the monotony of many a wild coast, and is a welcome variation to the eternal booming of the surf against the rocks and shingle. Incessantly the male warbles from the early dawn till evening's dusk settles over the sea. The whole day long it is ever and anon fluttering up into the air for some distance, then flying back to its perching-place, warbling out its little song as it returns. The bird generally rises uttering its sharp call-note till the zenith of its flight is reached, then begins its song, which is continued till it reaches the ground again. Very often it sits and warbles on the rocks or on a big stone lying on the beach. The Rock Pipit's song is equal perhaps in sweetness to that of the Meadow Pipit, and resembles it in some particulars, but it wants the rich melody and duration of that of the Tree Pipit.

Like many other birds which pair early, the Rock Pipit breeds rather late. April's fresh and vernal month has nearly waned, and the sea-birds are fast settling down to the duties of the year, before this species begins nest-building. Its nest is rather difficult to find, owing to the care which the old

birds take in concealing it under the bits of rock or amongst the long grass and sea-campion on the top of the low cliffs near the sea. I have found it in a disused Puffin's burrow, also under a broad slab-like stone, and in the ruined walls of a hut. I once met with it in a crevice of the cliffs close to where a colony of Razorbills were breeding. It is a simple but well-made little structure, composed of fine and coarse grass, and frequently lined with hair, if that material can be obtained. I once found a nest of this bird on the Ferne Islands, in which a large white Gull's feather had been inserted in the lining. The young naturalist will often feel puzzled over the nest of the Rock Pipit, because the bird uses so many kinds of materials in its fabrication. Some nests are almost exclusively composed of moss; others have bits of seaweed mixed amongst the usual materials. The nest is made at varying distances from the water, sometimes close to the waves, on the summit of the low rocks, at others far back from high-water mark, amongst the rough sandy ground where thistles and other tall weeds are plentiful. The eggs are four or five in number, and are remarkably uniform in colour and size. The ground colour is dirty bluish-white where it is visible, and the markings, which profusely cover the surface, are reddish or grayish brown. Some eggs are streaked with darker brown on the large end. The markings are generally small and scattered evenly over the surface, but occasionally they are thickest on the large end, where they sometimes form a zone or circular patch. The female sits closely, and when the nest is discovered both birds become very anxious for the safety of their treasure, flying wildly round and round, or perching at a distance on some rock or stone, keeping up a chorus of complaining notes. I have often approached the nest within a few feet before the sitting-bird has fluttered out, when her anxious cries soon brought the male upon the scene. This is when the nest contains highly incubated eggs or

young birds; if it contains fresh eggs only, the parents are not nearly so anxious, and usually fly right away from the vicinity. In some few cases the Rock Pipit may rear two broods in the season; but so far as my observations go, this is the exception and not the rule.

When the young are safe upon the wing and the moulting season is almost over, the Rock Pipits gather into little parties, and as the season advances these become flocks often of considerable size. The Rock Pipits then leave many of the more northern localities and visit the salt-marshes on the low-lying coasts. Numbers of these birds come over the sea from lands where the winters are too severe for them to find food and shelter. I have seen Meadow Pipits and Snow Buntings mix with flocks of this bird on the wild weedy "saltings" and low scrub-clothed sand dunes in the Wash. They are much shyer than in spring and summer, and the least alarm sends the whole flock hurrying off in irregular order, sometimes looking as if they were entirely at the mercy of the wintery gale.

THE WOOD LARK

(*Alauda arborea*)

THERE are few British birds more locally distributed than the Wood Lark, and the farther north we go the rarer it becomes. Although very closely resembling the Sky Lark in its general appearance, it may readily be distinguished from that bird, even on the wing, by its much shorter tail. Its habits and the haunts it frequents are, however, very different. We must not search for the Wood Lark on the breezy upland pastures, or even in the wide expanse of meadow land and common so dear to the Sky Lark, but in localities where trees are numerous, with plenty of open spaces between them, such as old parks and by the edges of woods and plantations. It also loves the southern heaths, which are generally thickly studded with bushes and small trees. As its name rightly implies, it is a bird of the timber ; where there are no trees we never find any Wood Larks. This charming little songster is so much sought after by the bird-catcher, its reputation as a cage bird being great, that in many localities where it formerly used to be common it has been wantonly almost exterminated. When once settled in a certain district it rarely strays far away during the summer, and the observer will generally find it at home, no matter what hour of the day he may seek it. In many of its habits the Wood Lark very closely resembles the Tree Pipit. Like that bird it has a favourite haunt to which it closely keeps ;

it also selects some bare branch from which it sallies into the air to warble forth its song or alight after its aerial journey.

As soon as the flocks of Wood Larks have broken up in the early spring, the cock spends most of his time in song. He sings lustily from the branches of the trees, and even more so when flying round and round high in air. He does not soar so rapidly or so high as the Sky Lark, but flies more in circles, and often poises and flutters a few yards above the tree-tops. In the melody and richness of its tone the Wood Lark's song is far superior to that of the Skylark. If not quite so loud it is even more continuous, and there are parts of it that almost rival the refrain of the Blackcap and the Nightingale. The Wood Lark may almost be classed as a perennial songster, for except in the moulting season it may be heard right through the year, even in midwinter, when an unusual interval of warm weather rarely fails to call it into voice.

Nowhere have I seen the Wood Lark so common as when on a lovely May morning I came across quite a colony of these birds amongst the wooded heights of the Aures Mountains. They were in a little clearing amongst the dark cedar forest, and the bracing mountain air was resonant with their song. Although surrounded with many rare and beautiful birds, the little Wood Lark seemed for the moment by far the most interesting, and I sat and listened to his strains, which so forcibly reminded me of far-off English woods and groves, and which seemed to transport me in a moment from Algerian wilds to the woodlands of Kent and Surrey, where I have often heard his song. I could not help observing how tame and trustful the bird was here—so different from my experience of him in England. Although the forest was on every side, I never noticed a Wood Lark in it; they preferred the open spaces where the trees had been felled by the French foresters or their Roman predecessors. As many as six birds

could be seen in the air together, all singing their loudest, and very often one would sit on a low juniper bush and allow me to approach within a few yards. I watched one of these birds assist some Firecrests in mobbing a poor Kestrel that quite unintentionally intruded upon their haunt, and then soar into the air and warble a song of triumph as the big bird disappeared amongst the gloomy cedars. Upon the ground the Wood Lark is very active, running hither and thither in search of food, and occasionally standing for a few moments on a clod of earth. In this country it often lies so close amongst the herbage as to be almost trodden upon before it takes wing. When rising it generally utters a musical double-note very similar to that of the Sky Lark. Although so fond of perching in trees it never roosts in them, but sleeps upon the ground among the herbage.

The food of the Wood Lark in summer is principally composed of insects and larvæ. The bird is especially fond of small beetles and worms, but in autumn and winter its diet is considerably changed, and it appears to live almost exclusively on small seeds and even the tender shoots of herbage. This complete change of food is a curious and interesting fact in the economy of many of our resident birds. Such seed-eating species as Buntings and Finches, and berry-eating birds as Thrushes, all live more or less exclusively on insects in spring and summer, and on them their young are reared. Being thus able to adapt themselves to whatever food is at hand, they remain in this country when such birds as the Warblers, the Swallows, and the Goatsucker are compelled to seek more genial climes when their insect food becomes scarce.

The Wood Lark pairs very early in the spring, and soon after sets about nesting duties. It is a comparatively early breeder, even more so than the Sky Lark, and what is still more interesting it very probably pairs for life. Regularly every springtime we find the old accustomed haunts tenanted;

even the same dead branch on some particular tree is used for a perching-place as before, and the nest is built on the same bit of ground as it was the preceding season. This I find almost invariably to be the case in places where the birds are left unmolested. In the boisterous March days I often see the Wood Lark chase its mate with great rapidity over the tall bushes, warbling hurriedly all the time; and sometimes two rival males will vie with each other in trying to gain the affections of a female, crouching low down in the herbage, listening, as it were, to the clear tuneful melody poured forth for her own special advantage. The nest is built in various situations, sometimes very much exposed, but more often artfully concealed under the shelter of a bush or behind a tuft of coarse grass. You may sometimes find it cunningly hidden under a mass of briars through which the coarse herbage grows luxuriantly, and by way of contrast to such a situation it may occasionally be seen wedged tightly in the footprint of a horse or a cow amongst the short turf in a bare part of the park. It is a simple structure, made externally of coarse grass and moss, and lined with finer grasses and a little hair. In many nests the latter material is omitted, the birds not being able to obtain it. The eggs are four or five in number, and differ considerably from those of the Sky Lark. They are buffish or greenish-white in ground colour, spotted with reddish-brown and paler markings of violet-gray. The character of the markings varies a good deal, but generally the eggs in a nest resemble each other. Some eggs are evenly marked over the entire surface; in others the spots are collected in a zone or circular patch on the large end or in a band round the middle. The collector will find that in the eggs of the Wood Lark the ground colour is much more distinct and the markings more clearly defined than in those of the Sky Lark. They are also on an average rather smaller than those of the latter bird. As is the case

with most small birds breeding on the ground, the Wood Lark is a close sitter and rarely leaves the nest until almost trod upon.* In some cases two broods are reared in the year, the young being abandoned as soon as they are able to fly and forage for themselves.

At the approach of autumn's mellow days, when the woods begin to glow with those bewitching tints of decay that are even fairer than the delicate greens of spring, the Wood Lark's habits change. It then begins to collect in flocks, which wander about a good deal in search of food, but it never unites in such enormous gatherings as the Sky Lark. A few Wood Larks often join a party of Sky Larks in the winter months, from which they are easily separated by their proneness to alight on the nearest trees when the flock is disturbed. When flushed from the pastures which they often frequent at this season, the birds rise one by one or in twos and threes, uttering their liquid musical double-note, some to take refuge in the tall trees, others to fly a little distance just above the ground and alight again.

By the way, in spite of what the greatest living compiler of natural-history books may state to the contrary, and who so recently as the spring of the present year gravely tells us that the Sky Lark "is incapable of perching on branches," that bird does sometimes alight in trees; and there is nothing in the anatomy of its feet to prevent it indulging in such a practice. Notwithstanding all our progress, the school-master, though very much abroad, has still a great deal to accomplish. I have heard the Wood Lark warble on the ground in winter, and its regular song commences in mild forward seasons as early as February, when the flocks begin to disperse.

THE CIRL BUNTING AND SNOW BUNTING

(*Emberiza cirrus* and *E. nivalis*)

AMONGST the pleasant fields and on the wooded commons of the southern counties the naturalist will sometimes have the good fortune to meet with the rare Cirl Bunting, a bird very closely resembling the Yellow Bunting, but easily distinguished by its dark-green instead of bright-yellow crown, and by its olive-green rump and upper tail coverts, which in the common species are bright chestnut. The Cirl Bunting is a very local bird and confines itself almost exclusively to fields where there are tall trees in the hedges, and to the margins of woods and plantations. It is somewhat singular that the Cirl Bunting is so fastidious in its choice of a haunt, when we know its close relation, the Yellow Bunting, is one of the most widely dispersed of birds. Probably the absence of certain favourite food is the reason of its local distribution; and I am bold enough to hazard the conjecture that the abundance of the grasshopper in our southern counties is the secret of the Cirl Bunting's presence in them, that insect being the food on which its young are chiefly reared.

The Cirl Bunting frequents the tall trees rather than the lower vegetation, and as it is rather a skulking bird it is apt to be overlooked. It is, however, a most industrious musician, and its song proclaims its presence to him who is conversant with the notes of birds. This resembles very closely the Yellow Bunting's love song, but wants the long-drawn note which

usually terminates that bird's refrain. The Yellow Bunting will sit delicately poised on some tall bending twig at the top of the hedge and sing incessantly even though we are close at hand; but the shy little Cirl Bunting is much more wary, and too close observation invariably sends him into the thickest parts of the trees, where he remains concealed until the danger has passed or he regains his confidence and hops out on to a bare branch and sings once more. The song begins in April with the advent of spring, and is continued through the summer, becoming less frequent in June and July, and finally terminating in the autumnal moult. I have heard this little bird sing in autumn, but the event is rare and may be classed with the uncertain music of the Chaffinch at that season.

The Cirl Bunting, although it spends the greater part of its time amongst the branches, visits the ground to search for food, and there its actions are very similar to those of its congener. In spring it often visits the newly-sown land to pick up the scattered grain, and in autumn it frequents the broad brown stubbles for a similar purpose. It may be seen hopping about the rough weedy pastures, occasionally running a few feet to catch an insect. When flushed it rises quickly, and its flight is very much like that of the Yellow Bunting—powerful, but drooping, erratic, and undecided. When at rest on a twig it frequently wafts its tail up and down, and is incessantly uttering its harsh call-note. Early in the vernal year the Cirl Bunting becomes very pugnacious, and rival males often chase each other through the trees with great rapidity, all the time uttering a series of sharp call-notes. The pairing season is at hand, and shortly afterwards we may expect to find the simple little nest. There is much in the nesting economy of the Cirl Bunting which is interesting. In the first place the nest is generally built at some distance from the ground, rarely on it. A site is often selected amongst the

dense and impenetrable branches of the prickly furze, or under the long trailing wires of the bramble and the dog rose which arch gracefully over it. When on the ground the nest is built in a little hollow on a bank or behind a tuft of grass at the foot of the trees. It is a slight structure, made externally of coarse grass, dead leaves, and roots, and lined with finer roots and a little hair. The Cirl Bunting obtains much of its nest material from the heaps of "twitch" or "bull polls" which are collected from the fields in spring and burned. The eggs are four or five in number, bluish-white in ground colour, blotched, spotted, streaked, and scratched in true Bunting style with dark liver-brown. The eggs very closely resemble those of the Yellow Bunting, but when compared are much more rotund, the pencilled markings are darker, and the ground colour is more blue than purple. The female bird performs the task of incubation, and during the whole of the period the male seldom strays far, but sits on the neighbouring trees and cheers her with his simple song.

The food of the Cirl Bunting is composed of various kinds of insects in summer, and in autumn and winter this fare is varied with seeds of many kinds and grain. In autumn Cirl Buntings gather into little flocks, and often mingle with Yellow Buntings, Greenfinches, Chaffinches, and Bramblings, frequenting the fields and tangled hedges, where newly sown grain and the seeds of tall weeds furnish an abundant supply of food.

The second of these little choristers is a winter visitor to our shores—an arctic stranger driven southwards by the severity of the polar winter. I am, however, perfectly convinced that this bird breeds on the Grampians, although I have never actually seen the nest or the young—hence my reason for inserting this species among our rarer birds. It is a thorough little bird of the snow and the arctic regions—a gipsy migrant that never seems settled here, and always

hurries north as soon as the frost subsides, to be driven back again by the next snowstorm. In this country we must not look for the Snow Bunting in the inland districts; the weather must be severe, and the frost long continued indeed, that drives this charming little bird so far from the coast. It comes in October, and loves to frequent the wild, rough ground near the sea—the weedy salt-marshes, reclaimed land, and extensive sand dunes that skirt the waves are its favourite haunts. During exceptionally severe winters I have known parties of these birds visit our inland woods and fields, and for the time being unite with flocks of Bramblings; but they never stay long, and are off back again to their usual haunts at the first sign of a thaw. A flock of Snow Buntings is one of the prettiest sights to be seen along the wild bleak coast in winter. Like big black and white butterflies they flutter along close to the ground before the observer, or nestle among the shingle for shelter from the storm. It is a pretty sight to watch these charming little arctic strangers on a lowering day in midwinter, when each moment we expect to see real instead of feathered “snowflakes” coursing through the air. They seem to bring the romance of the arctic regions with them, and as we watch them fly in undecided course along the shingly beach our thoughts turn unconsciously towards the North Pole and its many mysteries. Any one of these little black and white strangers fluttering before us may have been born at the very Pole itself. It is probably much more familiar with the aspect of the country there than it is with this bit of rough Lincolnshire salt-marsh. Its race has solved the problem ages ago which all the skill and learning, pluck and endurance, of man has hitherto failed to accomplish. These little birds are perfectly at home amongst the snow. They run along the surface with dainty steps like a Wagtail, or if occasion requires hop just like a Sparrow. In some parts of England the early arrival of the Snow

Bunting is regarded as the forerunner of a long and severe winter.

It has been stated in works on ornithology that the Snow Bunting never perches in a tree. He cannot well do so in the usual districts he frequents, far above the northern limits of such vegetation, for the simple reason that trees do not exist ; but in this country I have repeatedly seen flocks of Snow Buntings perch in trees, and I have shot them from the branches. I have also seen them perch on telegraph wires. The same erroneous impression widely prevails respecting Wagtails ; but they perch freely in trees, and the Gray Wag-tail especially takes refuge in a tree, when flushed from the bed of the dancing upland-stream. The Snow Bunting, however, obtains its food on the ground, and this is chiefly composed of seeds of various kinds during the bird's sojourn in this country. In its summer home insects form its principal food, but it also eats the buds of plants. During exceptionally hard weather the Snow Bunting frequents the hard country roads, hopping about along the tracks made by the farmers' carts, and feeding on the droppings from the horses. It will also venture near to man's habitation when the snow is too deep for it to reach the seeds of grasses and weeds, and pick up a meal from the corn-stacks. After a heavy fall of snow, flocks of these birds may sometimes be seen wheeling and flying about in a very erratic and undecided manner ; and they soon desert a district if the ground remains long covered, returning when the thaw begins. Snow Buntings leave our coasts early in spring, being amongst the first birds to arrive in the arctic regions after the winter is over.

Of the habits of the Snow Bunting during the breeding season I know nothing from personal observation. Specimens of its nest which I have examined are very pretty structures, made of dry grass, roots, moss, and slender twigs, and lined

with hair and feathers and even vegetable down. The eggs, six or seven in number, are bluish or yellowish white in ground colour, spotted and blotched with rich reddish-brown, and occasionally pencilled with a few streaks of still darker colour. The eggs are not at all typical of a Bunting's, being not nearly so much streaked, and resemble somewhat those of the Common Bunting, but are of course much smaller.



THE HAWFINCH

(*Coccothraustes vulgaris*)

OWING to its skulking habits and shy timid disposition, the Hawfinch is thought to be much rarer than it really is. A bird of conspicuous plumage, it loves to hide amongst the dense vegetation of the woods and shrubberies and orchards, only venturing out to feed when all is quiet, especially in early morning, and hurrying back again into the cover at the least alarm. So retiring is this fine handsome bird that several pairs may take up their residence in a quiet corner of the woods or orchard and remain unobserved for months. I often meet with the Hawfinch at dusk amongst the gloomy-looking yews under which I am standing on the look-out for my little feathered friends, the Redwings and the Bullfinches. Perhaps it has been feeding amongst the distant beech trees,

and it flies stealthily up to the evergreens, perching a moment on some outlying branch, then rapidly hopping into the thickest cover. The Hawfinch is astir early in the morning, and then I often see him upon the ground, where he looks remarkably clumsy and out of place, searching amongst the grass for seeds, or turning over the brown beech leaves in quest of fallen mast.

It is curious how the habits of some birds are precisely the same in this country as they are in distant lands, where one would naturally expect to find them considerably modified, owing to the altered conditions of their surroundings. I had many opportunities of studying the habits of the Hawfinch in the evergreen oak forests of Northern Africa. One would almost be led to think that the cause of the bird's shyness in England was owing to the manner in which it is persecuted by gardeners and collectors, if we did not find it just as wild and wary in these forest solitudes where it is never molested by man. I first met with the Hawfinches in a clearing of the forest, where the trees were scattered up and down in little clusters, and, as a rule, it was only when they flew from tree to tree that I could get a view of them. Sometimes I observed them sitting quietly amongst the branches, turning their large heads from side to side in evident alarm, and peering about in all directions as if in search of the danger. The flight of the Hawfinch is undulating, but sometimes straightforward, and is then very rapid. As the birds flew from tree to tree I noticed that they usually dropped down into the branches in preference to flying up into them from below. When sitting in the trees the males occasionally uttered a twittering note which put me in mind of the Greenfinch. In fact, the Hawfinch possesses slight claim to rank as a songster; in the vernal year it utters a few loud notes which might almost be called monotonous, if several birds did not join in the chorus, when the general effect is far from unpleasing. Many birds

love to perch in conspicuous positions when engaged in song ; but the Hawfinch twitters from the dense recesses of the foliage and keeps well out of sight amongst the trees.

The food of the Hawfinch varies a good deal, according to the season of the year. Thus in spring and summer he lives almost exclusively on insects and fruit. He visits the garden for peas and currants, and frequents the orchard in cherry time, always preferring the hard stone of that fruit to its rich luscious covering. In autumn various berries and nuts are eaten. He is passionately fond of beech-mast and the seeds of the hornbeam ; whilst in winter he often makes a meal on the hawthorn berries. Yew berries are eaten in great quantities ; and in early summer caterpillars are devoured, this latter food being the principal sustenance of the young birds.

The Hawfinch may pair in spring, but not a twig is crossed in furtherance of a nest until the first faint signs of summer are spreading over the fields and woods. It is not until the orchard trees have lost much of their pink and white vernal glory, and the leaves are out full and dense, that the Hawfinch seeks a site for its nest. It is not until the big horse chestnuts appear like spiked mountains of bloom, and the hawthorns are rich with fragrant flowers, or the beech woods are clothed with bright green summer garniture, that this shy bird begins to build her home. She must have plenty of shelter for it and for herself ere she dare venture to commence it. Curiously enough the Hawfinch shows little partiality for the evergreens as a nesting-place, although occasionally it makes use of a yew or a holly, and more frequently the thick clustering ivy growing round some forest giant, for its purpose. The nest is often built in a fork of the apple or pear tree, near the trunk on a beech or elm, or in a whitethorn or an oak. Sometimes it is only a few feet from the ground ; but frequently as much as fifty or sixty feet above it. Although the bird is by no

means gregarious in the breeding season, several nests may often be found quite close together in localities where suitable nesting-places are rare. I have noticed a similar peculiarity in the Stormcock and the Greenfinch. Few of our British nests exceed in wild rustic beauty that of the Hawfinch. It puts you in mind of the Bullfinch's cradle, only it is much larger and more compactly woven. The outside is formed of fine twigs, often those of the birch and beech being selected, intermixed with stalks of weeds, bits of lichen, roots, and scraps of moss, and sometimes one or two dead leaves. This rude cup is lined with dry grass and finer roots and hair. In shape it is rather flat and somewhat bulky, but is always neatly finished. The eggs are five or six in number, and are laid towards the middle of May. They are pale olive-green or brownish-buff in ground colour, streaked out and spotted with dark greenish-brown, and paler markings of gray. Many eggs are almost as much streaked as those of the Yellow Bunting. They cannot readily be confused with those of any other British species. Throughout the whole season of incubation the parent Hawfinches are most careful not to betray the whereabouts of their nest, going and coming with stealthy quietness. The hen bird hatches the eggs, but both parents are assiduous in bringing food for the young. As soon as the young birds are able to leave the nest their parents lead them to the neighbouring gardens and orchards, where they make sad havoc amongst the green peas and ripening cherries. But let not the gardener be too severe on these handsome birds ; they deserve a share of the fruit after ridding garden and orchard of many noxious insects and grubs. Besides, the gardener is apt to do far more mischief in a moment by discharging his gun amongst the fruit trees than a whole family of Hawfinches would accomplish in a year.

As the season wanes these little parties of Hawfinches often congregate into much larger flocks, and frequent the

beech woods and other districts where their favourite food abounds. The young and their parents in most cases keep together throughout the winter, and so far as I can learn only one brood is reared in the season.

The Tree Sparrow (*Passer montanus*), as one of our rarer birds, here claims a passing notice. It is distinguished from the House Sparrow by its slightly smaller size, chestnut head and nape, black ear-coverts encircled by white, and double wing-bar. Another interesting character is that the sexes are alike in colour. This species loves the wilderness ; it is a bird of the open country, the pine woods and quarries near the moors remote from houses, and is rarely seen in towns. I had the good fortune to meet with this bird in St. Kilda, where it breeds in the rough walls and amongst the boulders. It is a remarkably active bird, flies quickly, is shy and wary, and its note is much more shrill and musical. It breeds in April, making a warm nest of dry grass, roots, moss, wool, and feathers either in a hole in a tree, a crevice of a rock or a wall, or under the eaves of a barn or shed in the fields. The eggs are five or six in number, and are subject to the same amount of variation as those of the House Sparrow, from which they are only distinguished by their smaller size. The food of the Tree Sparrow is similar to that of its ally—insects, larvæ, seeds, and grain. In autumn its numbers are increased by birds from the north of Europe, which migrate in flocks ; but the bird is much less gregarious than the House Sparrow, with whom it sometimes associates, and in most districts may be observed in pairs throughout the year.

THE SISKIN AND TWITE

(*Fringilla spinus* and *F. flavirostris*)

THE Siskin is one of the smallest of the British Finches, and also one of the most interesting. It is a bird of the wild northern pine woods, only wandering south in winter, and seems to take the place of the Greenfinch in the evergreens of the north. A few birds remain over the summer in their southern haunts, but it is only as a winter visitor that it is common. Let us study the habits of this charming little bird during the autumn and winter months before we accompany it on its northern flight to the wild mountain forests where it builds its nest.

Siskins unite into flocks of varying size, and appear once more in their usual haunts by the end of September or early in October. Sometimes we only meet with a small party of these engaging little creatures, or even a solitary bird attaches itself to a company of Titmice or Lesser Redpoles—the large flocks are exceptional gatherings, to be observed in severe winters or in localities where food is unusually plentiful. We may meet with the little Siskin wherever the alder or fir trees flourish. A favourite haunt is along the fringe of alders that skirt the stream; and as these trees shed their leaves pretty early, we have a good opportunity of watching the actions of the busy little birds. They search the trees just like Titmice, clinging to the clusters of seeds, swaying to and fro, now with head downwards, now with wings

fluttering rapidly as they poise before a twig, on which perchance some insect is lurking. From tree to tree they move in drooping flight, uttering their low Tit-like call-note—a rapid *ti-ti-ti-ti*—as they go. Now you may see them clinging with one leg, swinging backwards and forwards like a pendulum; or perched on the stouter branches, they pause a moment to clean their sharp little bill of the bits of seed that cling to it. They are by no means shy, and allow you to follow them the whole range of the trees without displaying the least alarm. The Siskin rarely visits the ground. I have sometimes seen it on the rough clover stubbles, in company with Lesser Redpoles, feeding on the small seeds. As soon as the autumn moult is over the little Siskin regains his song, and may be heard to warble at intervals right through the winter; but it is in springtime that he sings most industriously, and at all hours of the day his voice sounds faintly from the firs. The song is a simple one, merely a few rapidly uttered notes, which perhaps sound to best advantage when the bird is hovering in the air, which he often does at pairing time. In autumn and winter the Siskin lives principally on seeds of various kinds and farinaceous buds. Alder seeds are the Siskin's favourite food, and whenever these trees may chance to bear an unusual crop, which is by no means every season, these birds are sure to be common.

As soon as the first signs of spring creep over the northern larch and fir forests, the Siskins desert their southern quarters. The alder swamps have now lost their charm, and the southern plantations no longer form a fitting home for these little Finches. They are impelled northwards by resistless impulse to fly; dim recollections of the distant pine forests seem to enter their little minds, and before the rude winds of March are finally hushed our merry restless Siskins are safe back at home. The nest of the Siskin is very difficult to find, and no wonder, for such a tiny home requires the sharpest eyes

to find it snugly hidden away some forty feet up the pine or fir tree's dense and gloomy branches. You may wander for hours up and down these grand old woods, struggling through the dense lower branches without finding a tree which may possibly contain a Siskin's nest. And then, when the tree by chance is found, the search is by no means over, and hours may elapse before the tiny nest is discovered at last. It resembles that of the Lesser Redpole, and is usually built on one of the flat branches that grow almost horizontally from the trunk. Dry grass, moss, and rootlets form the outer structure, and this is lined with vegetable down and occasionally a few feathers. I have taken from a dense larch plantation the nest of this bird, in which the lining was composed of hair and one or two white feathers. The eggs are five or six in number, bluish-green in ground colour, spotted with dark liver-brown and a few paler marks of gray. On some eggs a few streaks may be seen. They very closely resemble certain eggs of the Lesser Redpole, and from those of the Goldfinch they are quite indistinguishable. In many cases the Siskin rears two broods in the season, and the female performs the task of incubation. When the nest is menaced by danger the little birds become very anxious and flit about from tree to tree in a restless manner, often betraying the whereabouts of their treasure by their great solicitude for its safety.

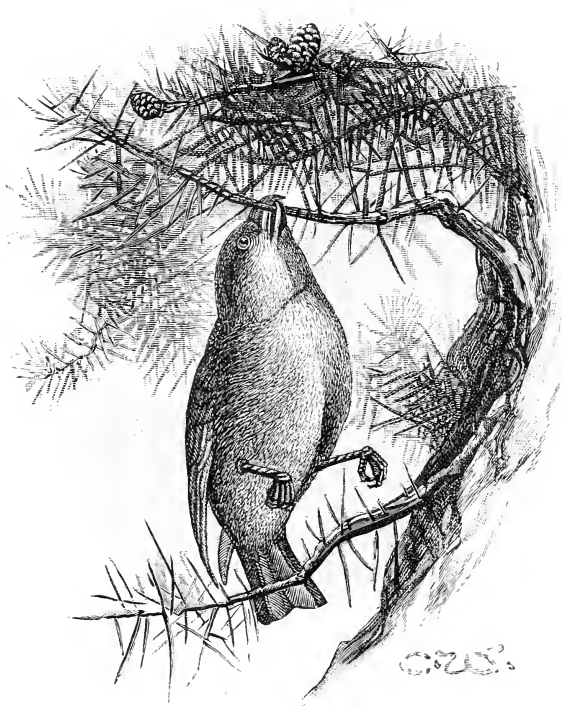
Very similar to the Siskin in its annual movements is the Twite, only instead of pine woods it loves to frequent in summer the broad treeless tracts of Grouse moor. In winter, when the moors are too barren and dreary for this sober little bird, it leaves them and seeks the lowland pastures and stubbles, where it awaits the return of spring. It may be readily distinguished from its relations, the Linnet and the Redpole, by the absence of the claret coloured patch on the head and breast, and in spring and summer a further point of distinction is to be found in its yellow bill.

To the breezy moors then we will bend our steps, and study the habits of the Twite during its breeding season. We will pass by the Grouse crowing lustily from the heather, and only take a passing glance at the Ring Ousel in his white cravat, as he sits and pipes his loud refrain on the rough walls and rock boulders, and hasten onwards to where the heath is long on the sides of the rough valley, at the bottom of which a mountain stream goes merrily dancing over the big stones. The Twite is by no means a shy bird; in nine cases out of ten we first see him sitting on the top of a heather bush uttering his peculiar note, which our imagination likens to the bird's name—a long-drawn *twa-ite*. He flits from bush to bush before us, or, suddenly rising into the air, makes a long detour and returns to his old haunt. It is late in spring, and the Twite is therefore full of music. This somewhat resembles the song of the Linnet, but is neither so loud, so sweet, nor so varied. Nevertheless it forms a pleasing relief to the bird's monotonous haunt, and serves to enliven scenes where bird music is by no means plentiful.

The Twite has visited these moorland wastes for the purpose of rearing its young, and early in May it seeks out a site for the nest. This is generally built amongst the heather, close to the ground, and in many cases on the ground itself. Both birds assist in making the nest, which is a neat structure composed of dry grass, dead twigs of heath, roots, and a little moss, beautifully and warmly lined with rootlets, wool, and feathers, and occasionally with hair and vegetable down. In this warm little nest the female lays four or five eggs, greenish-blue or bluish-white in ground colour, spotted with dark brown and an occasional darker streak. If disturbed at the nest the sitting-bird flits hurriedly away, often hurrying through the tall heather for some distance before rising, and then perching at no great distance to watch the intruder. Uneasily it flits from branch to

branch ; or if the eggs are quite fresh it sometimes flies right away, and we see no more of it.

During the breeding season the Twite lives on numerous insects, especially a small black beetle ; but in autumn it changes its diet considerably, and subsists almost entirely on seeds until the following spring. In autumn the Twite collects into flocks, which wander from the moors to the cultivated lowlands. We often see them on the stubbles or the weedy pastures which the Sky Lark loves, and not unfrequently a flock may be seen amongst the meadow grass. Here their habits and actions are very similar to those of the Linnet and the Redpole. These flocks of Twites often keep together till very late in the spring and long after the birds have reached their summer haunts on the moors. I have seen the Twite in flocks as late as the end of May ; and in St. Kilda in early June numbers of these birds, mostly young ones, were feeding on the weedy grass lands. When alarmed the whole flock rise simultaneously and career about the air, uttering their musical twittering call-notes ; and even in winter the males occasionally indulge in little bursts of song.



THE CROSSBILL

(*Loxia curvirostra*)

BEFORE leaving the Finches we must pay a little attention to the habits and economy of one of the most singular species in this large and important family of birds. This is the Common Crossbill, one of a little group of species that differs from all other known birds in the formation of the bill. As the name aptly implies, the two mandibles, instead of being one exactly under the other, as in most birds, cross each other at the tip, in some species for a considerable distance. It is also a curious fact that the young birds are hatched

with their beaks of the normal shape, not attaining this singular development for some time afterwards. This singular shaped bill, however, is of great service to the Crossbill, enabling it to split open with ease the fir and larch cones and other seeds, which are enclosed in hard cases. So far its structural peculiarities; now let us attend to its life-history.

The Common Crossbill is one of those birds which is singularly uncertain in its appearance, and is best known as a winter visitor to this country. Its migrations are very irregular, and resemble those of the Snow Bunting and the Waxwing. Crossbills may be remarkably plentiful one season and not be seen again in any numbers for years. They are equally capricious in the choice of a haunt, appearing suddenly in one locality and remaining for weeks, then just as suddenly disappearing again and not returning for many years. If they stay and breed in a district one spring, it is by no means certain or probable that they will continue to do so the next, except in the pine districts of the north, where the bird is of tolerably regular residence. Crossbills are very gregarious birds, and are more or less sociable throughout the year, even in the breeding season, when little parties of males may often be met with in the woods. If comparatively rare birds, they are by no means shy ones, and allow the observer to approach quite close and watch them climb about the branches in quest of cones and berries, and to admire the rich contrast of their brilliant upper plumage with the dark green firs. Their actions in the branches very closely resemble those of a Siskin or a Titmouse. Sometimes they climb about assisted by their beak, like a Parrot. They cling to the extremities of the twigs, where the finest cones are found, and dexterously wrench them off and then convey them to the broader limbs, where, holding them in their claw firmly wedged against the bark, the strong bill with a peculiar twist soon breaks away the outer covering and exposes the kernel. They are very restless

birds, and flit in undulating course from tree to tree, all the time keeping up an intermittent chorus of twittering notes which sound something like the syllables *si-si-si*, sometimes loud and piercing, sometimes low and guttural. When flying from the observer, the brilliant red or yellow plumage on the backs of males and females shows out very distinctly, and is a useful aid in identifying the birds.

The food of the Crossbill is composed largely of the seeds of coniferous trees ; the bird also eats various kinds of berries and fruits, especially apples, which it splits open to obtain the pips ; and in summer insects and larvæ of different kinds are preyed upon. It is very probable that the young are reared almost exclusively on an insect diet, perhaps varied with the smaller fruits. Crossbills often mix with other birds, apparently for no other reason than that of companionship, and may frequently be observed in company with Siskins and other tree-haunting species.

At the approach of the breeding season much of the Crossbill's trustfulness passes away, and it gradually becomes a shy skulking bird. It is one of the earliest birds to breed, certainly the earliest of all the British Finches. Its breeding grounds are chiefly in the pine woods, although the nest is occasionally made amongst deciduous vegetation. I once knew a nest of this bird built high up in a dense whitethorn hedge, close to a wood which Crossbills had frequented through the winter. The nest is built at various heights from the ground, the favourite situation being in a fork of the branches, near the top of the tree, or in a prong of some horizontal limb, at some distance from the trunk. It very closely resembles that of the Bullfinch—a rustic structure, in which many fine twigs are used in forming the outside framework. Some nests are made externally, almost entirely of the dead twigs of the fir ; and the inner nest is made of dry grass and moss, and occasionally a flake or two of the thin pine bark. It is finally lined

with wool and feathers, and sometimes a little hair. In this nest the female lays four or five eggs, pale bluish-white in ground colour, spotted with dark brown, and occasionally streaked with still darker colour. Eggs of the Greenfinch are absolutely indistinguishable from those of the present bird. The eggs are often laid by the end of February or early in March. I do not think that the Crossbill rears more than one brood in the year, and the late nests of this species which are occasionally met with doubtless belong to birds whose earlier efforts were unfortunate.

As soon as the young can fly, the families of Crossbills begin their wandering life again, sometimes uniting into small flocks, and for the remainder of the year are thorough little nomads, with no fixed home, but appearing to hunt incessantly for districts where their favourite food is plentiful. They thus belong to a class of birds which ornithologists have very aptly called "gipsy migrants." We have many of these birds which pay us their uncertain visits from time to time, amongst which may be mentioned the Snow Bunting, the Waxwing, and the Shore Lark. These birds are migrants, but have no settled winter home, and are constantly roving about, just on the borders of the frost, flying north with open weather, and coming south again with the returning frost.

Much confusion and more difference of opinion exists as to the extraordinary variation in the plumage of the Crossbill. The question is too complicated for discussion here, but is casually alluded to, as it still affords an opportunity for much further investigation and research by naturalists favourably stationed for observing this singular bird.

THE CHOUGH

(*Pyrhocorax graculus*)

FROM causes that baffle all conjecture to explain them, this handsome rock-bird is gradually becoming rarer and rarer in this country. Formerly it had its noisy colonies on many an inland cliff, but at the present day it only frequents a few favoured localities on the rock-bound coasts. It may be that the Jackdaw is slowly driving out the Chough, or the spread of nineteenth-century civilisation is too much opposed to its retiring habits and love of solitude. Whatever be the cause of its disappearance, we have now to repair to the wildest and most inaccessible parts of the rock-bound coasts if we wish to see the handsome Chough at home. The Chough lives in societies like the Jackdaw, and many of its habits are very similar to those of that well-known species. It is one of the greatest of ornithological pleasures to sit upon the top of some ocean cliff, or find a resting-place on its rugged sides, and watch the various birds around you. By very force of contrast the Choughs claim your attention first. They are such conspicuous objects, flying to and fro along the face of the mighty cliffs, their glossy black dress in strong contrast to the fluttering snow-white Gulls, the deep blue sky, and the lime and chalk of the rocks. As they play and buffet each other in the air, or fly quickly past, the long bright red bill is very conspicuous and serves to identify the species at a glance. The note is very similar to that of the Jackdaw,

as is also their flight, which is performed by a series of rapid beats of the wings. They are gifted with no small powers of flight, and often tumble and toy with each other in the air, especially during the love season in spring.

Although the Chough establishes its noisy colonies in the ocean cliffs, it leaves them to feed on the fields and pastures inland, where it may often be seen walking about amongst the feeding cattle, mingling with Rooks and Starlings. I have seen it follow the plough in early spring, where its actions were precisely similar to those of the Jackdaw, running up and down over the clods of earth and along the smooth straight furrows; but it is a much more wary bird, and generally contrives to keep well out of danger. The Chough is an early bird astir, and begins his search for food before sunrise. This food consists largely of worms and grubs, but in spring and autumn grain is eaten in large quantities. The bird may sometimes be seen on the beach hunting about amongst the rocks and shingle at low water for anything eatable. When feeding, the Chough is almost as restless as the Starling, running hither and thither, often flying for a few yards, rising in the air and dropping again.

If the Chough does not frequent inland cliffs in this country now, it does so in Northern Africa; and I have a vivid remembrance of several large colonies of these birds I met with in the noble chain of the Aures Mountains, at the eastern limits of the Great Atlas range. Their habits here were much the same as on English cliffs; but I know no place in our islands where fifty or more birds can be seen in the air at once. One of these colonies was situated in a low ridge of rocks on the side of a stony valley, near the snow-capped summit of Djebel Mahmel. The country there is so sterile and barren that I was often puzzled how the birds could find a sustenance. I watched them in parties beating along the face of the rugged mountain side, and saw them

repeatedly drop suddenly down amongst the rocks, apparently in search of some particular kind of food. Every now and then one or two birds would enter their nest-holes, or just as frequently a pair would fly hurriedly out of them. Another of these colonies of Choughs was situated on the very summit of one of the highest mountains in a ridge of rocks commanding a magnificent view of the forest-clad hills. As I rode up the steep path the report of my gun, as I occasionally secured some rare bird, frightened the Choughs from their nests, and they commenced circling about in the air high overhead and far beyond range, uttering their shrill cries, which resounded through the woods and echoed again amongst the rocks. I saw one or two of these birds alight now and then upon the open spaces of herbage at the foot of the cliffs, and search amongst dung for insects and beetles. I never saw the Chough alight in the cedar trees, but always on the rock-shelves or in the crevices where it makes its nest. The wild notes of the Choughs were in beautiful harmony with the grandeur of the scene as the birds fluttered amongst the cliffs, or buffeted each other high up in the brilliant blue sky, or sailed dreamily above the lofty mountain tops clothed to their very summits with hoary cedar trees.

The Chough, unlike most other birds of the Crow tribe found in this country, is a rather late breeder, resembling the Jackdaw in this respect. The Raven begins patching up her old nest before the wintry snows have departed; the Magpie and the Carrion Crow at the first dawn of spring; but the Chough waits until May before it begins the great duty of the year. It may be seen in pairs throughout the year, so that there can be little doubt that it is united to its partner for life. The nesting-holes are generally selected in the most inaccessible parts of the cliffs, and are often so deep that it is quite impossible to reach the eggs. Sometimes they are in parts of the cliff which overhang, and fall sheer down in a

wall-like descent to the ever-restless waves below. In many cases the nests are placed quite close together, one opening serving for several pairs of birds. The nests are, as is usual with hole-builders, rather slovenly put together, made of sticks of various sizes, roots, and dry grass, and generally lined with masses of wool, and occasionally with hair. The eggs are from four to six in number, ranging in ground colour from white, with a slight tinge of blue or green, to creamy white, spotted and blotched with brown of various shades and with fainter markings of violet-gray. They vary considerably, both in size and shape and in character and intensity of markings. On some eggs the spots are few and large, on others much smaller and evenly distributed over the entire surface ; whilst occasionally the colouring matter is massed on the large end of the egg. The Chough lays its eggs late in May, and from what I have observed of the habits of this species, I am led to believe that but one brood is reared in the year. Both parents appear to assist in incubating the eggs and tending to the young, which are often fed on the pastures by the old birds as soon as they are sufficiently matured to leave the nest.

THE RAVEN

(*Corvus corax*)

It is only in the wildest districts that the bold wary Raven makes his residence now. Time was, and not so many years ago, when this handsome bird frequented most wooded districts; but the trees which once used to hold his nest for generations are now deserted and only have historical interest for the naturalist. At the present day, when almost every large wild bird has been driven from the land by game preserving and high farming, the Raven's chief fastnesses are on the rock-bound coasts, where his sagacity and constant wariness enable him to struggle successfully against the incessant war of extermination which is waged against him. But even here the wantonness of the shore-shooter and the greed of the egg-collector are slowly and surely working the extinction of the Raven, and as an English bird he will soon be numbered no more.

We had best follow the Raven to the wild coasts and bare mountain sides of Scotland if we wish to study his habits and economy now. There he still maintains his ground, and his loud croak lends life to many a desolate mountain glen. You may meet with him on these heathery hillsides of the north, or on the bare mountain tops, where he lives in company with the blue hare and the Ptarmigan. Or lower down the valleys you will often find him on the sheep pastures and in the birch coppices by the burnside. But his great stronghold is

the ocean cliffs or the inland precipices, where he builds his bulky nest on the ledges and can keep a good look-out for enemies or food. He loves to frequent the large Highland sheep farms, where he beats about and prys into every hole and corner in search of a meal. Should a lamb fall sick, or a sheep in browsing too near the edge of the cliff lose its footing and be dashed to pieces on the rocks below, the Raven is perhaps the first bird to discover the prize—the first either on the one hand to go and torture the poor creature until death mercifully relieves its sufferings, or on the other to speed in gluttonous haste and tear out the favourite morsels from the still warm and mangled carcass. He is everywhere. Nothing escapes his prying vision. Carrion abounds on the hillsides and on the shore; and he spends most of his time in finding it. But he is the essence of wariness, and long before he will venture near a dead animal he flies over and over it, backwards and forwards, as if fearful of an ambuscade. He beats slowly along shore a few yards above the waves, searching every creek and bay for food; whilst in the lambing season he lives on the hills, and the shepherds have to be ever on the alert to protect their helpless charges from this sable thief. He is one of the first birds astir in the morning, and one of the last to retire to roost at night.

The Raven can scarcely be called a gregarious bird, although it may be seen in little parties at all times of the year. It only keeps company with its kindred when feeding—many birds being drawn to one central point by a decaying carcass; but the gathering usually breaks up as soon as hunger is appeased. The flight of the Raven is powerful, and performed with regular beats of the wings. The bird looks very much like a giant Rook when in the air, and often indulges in various aerial movements, two birds sometimes toying with or buffeting each other as they fly along. The Raven is a resident in this country; consequently he has to vary his diet

with the season, and in winter he is often hard pressed for food. He lives on almost everything eatable. Weakly lambs and fawns are attacked and killed, small birds and animals are taken, and the eggs of game and poultry are carried off. Carrion of every description forms a welcome repast to the Raven; he also eats grain and fruit; and I have sometimes seen him on the pastures and fallow land searching with Hooded Crows for worms and grubs. A stranded fish on the seashore is a prize for the possession of which he often disputes with the large Gulls or even the White-tailed Eagles; and on St. Kilda I have seen him quite close to the cottages picking up refuse of all kinds.

The Raven is not a very noisy bird, and his usual note is a hoarse croak, which he utters when alarmed or excited. In the mating season he often varies this dismal croak by uttering a few notes more musical in character; whilst in captivity he is capable of learning a variety of sounds, imitating to a nicety the voices of tame birds and domestic animals. The Raven is easily tamed, and makes a lively and amusing pet, full of droll ways and cunning antics.

The Raven is an early breeder—one of the first birds to see about nesting duties, often beginning them before the snow is off the ground. Now that he is almost banished from the woodland districts, he generally makes his nest on some inaccessible precipice, either amongst the glens and mountains of the inland wilds or on the coast above the sea. I have seen his nest in both localities, but he breeds most frequently on a sea cliff. Ravens pair for life. For years and years the same nest is occupied, being added to and strengthened or repaired each season, so that in time it often becomes a very large and bulky structure, many of the sticks with which it is built being white with age. One very large nest which I examined was built on a cliff about fifty yards high, which sloped considerably from the base over a stretch of rocky

ground to the sea. A small grassy platform was near the nest, which was built under an overhanging ledge of rock, quite invisible from above, and partly so from below. The site commanded a good look-out ; and vainly the keeper tried to shoot the birds. They were always too quick for him ; but he took a mean advantage of them at last, and finally succeeded in poisoning the pair. Singularly enough he poisoned three Ravens at this nest, and the surviving bird always found another mate directly, until one fatal morning he found two sable victims on the beach below, and the spot was deserted at last. This nest was a huge structure, made of sticks of all lengths and thicknesses, branches of heather, many of them bleached with age, and evidently the accumulation of years. Masses of sheep's wool hung in festoons from some of the larger sticks, and the lining was made of finer twigs, roots, tufts of grass, and a little wool. The whole was firmly and compactly put together, not in any way wedged into the crevice of the rock, but built on the flat ledge which was devoid of all herbage whatever. The ledge and the face of the cliff all round the nest were white with the droppings of the old birds. Another nest I visited with the aid of a rope was built in a little cavity high up an inland precipice, covered with ivy. It was made of similar materials, but was not quite so bulky, and the lining contained more moss and sheep's wool. When in a tree the nest resembles that of a Rook or a Carrion Crow, but is of course much larger. The eggs of the Raven are from four to six in number, and they precisely resemble in their colour those of the Rook, being bluish or brownish green, more or less thickly marked with olive-brown and pale gray. A rare variety is reddish-white in ground colour, spotted with reddish-brown and violet-gray. Small eggs of the Raven are often met with ; in fact, they are very small in proportion to the bird and compared with eggs of other species of the Crow tribe.

When the eggs are being hatched, and in fact throughout the whole nesting period, the Raven relinquishes very little of its accustomed wariness. But it is by no means cowardly, and often beats off marauding Eagles and Hooded Crows that may chance to fly too near its home. Both birds assist in incubating the eggs, but the female performs the greater part of the task. The male often brings food to the nest, and when the young are hatched, both parents tend them with unceasing care. It is now that the Raven becomes a perfect pest in some districts, and levies an endless tribute on the poultry-yard, the game covert, and the sheep farm. Nothing which they can master is safe from their attacks. When the young can forage for themselves, which is not for some time after they leave the nest, they quit the neighbourhood of their birthplace for ever, and the old birds take to their roving life again, for but one brood is reared in the season.

THE HOODED CROW

(*Corvus cornix*)

IN spite of the dark tales of plunder and his questionable mode of getting a livelihood, the Hooded Crow is a favourite bird of mine, and one whose regular habits never fail to interest me. We in England only know the Hooded Crow as a winter guest, but in many parts of Scotland he is a resident, taking the place of his first cousin, the Carrion Crow, with whom he sometimes intermarries. He frequents the wildest districts, the extensive sheep farms on the hills, the rock-bound coasts, and even the most isolated islands. You may meet with him anywhere in the northern wilderness, provided there is food to be found. Where it is not much persecuted the Hooded Crow becomes remarkably tame ; and at St. Kilda I used to watch these impudent birds sitting on the roofs of the houses, ready to pounce down on anything eatable that might by chance be thrown out. They were remarkably tame, so long as I did not carry a gun, allowing me to approach them within a few feet, lazily hopping out of my path. They are very quarrelsome birds, and are incessantly fighting with the Gulls and amongst themselves over the scraps of food they come across. The natives detest the Hooded Crow ; in fact throughout the Highlands no bird is more hated than the Hoodie. There are no firearms in St. Kilda, and the artful Hooded Crows seem well aware of the fact, as they fly down upon the barley and potato patches

and scratch out the seed, even whilst the poor peasant is at work a few yards away. Then they are great egg-stealers, ever beating along the face of the ocean cliffs where the sea-birds breed, to carry off the eggs or even the helpless young. In some of these marauding expeditions the Hooded Crow comes off second best, and has to beat a hurried retreat from the enraged Gulls whose nests he has been plundering.

In its habits the Hooded Crow is more gregarious than the Carrion Crow, and may be seen in flocks and parties throughout the year. It feeds on all kinds of substances, and pokes and pries about in all kinds of places to find them. On the shore it may often be seen feeding on shellfish, or on any carrion that may be cast up by the waves ; inland it frequents the pastures and the newly-sown fields, where it lives on similar food to the Rook ; whilst in all parts of its varied haunts it is ever ready to murder any bird or animal smaller or less powerful than itself. Gamekeepers are ever on the watch to shoot, poison, or trap the Hoodie, for he wages an endless war on the preserves ; and farmers equally detest him because of his misdeeds amongst the poultry, the growing crops, and the lambs. There can be little doubt, however, that in spring and autumn the Hooded Crow rids the pastures and fields of countless noxious insects and grubs.

The note of the Hooded Crow is a hoarse *cra*, sometimes modulated and drawn out into *carruck* ; and in the pairing season he not unfrequently utters more musical sounds as he opens and closes his wings, spreads out his tail, and performs various evolutions in the air to attract or charm his mate. Hooded Crows do not differ in their flight from Carrion Crows and Rooks,—they pass through the air on the same regular and steady beat of wing, but they are capable of turning and twisting with great speed when they are pursuing a small bird, or buffeting each other as they often do in mid-air.

Hooded Crows pair for life, but they are rather late

breeders, generally contriving to bring up their young when the egg season is in full swing. Every year the same nest is tenanted, or a new one made on the old site, if it has been blown down or otherwise destroyed. The nest is built in trees as well as on rocks, the latter situation being generally chosen. I have seen its bulky nest in a stunted thorn tree on the bleak hillside, but when a tree is selected it is generally the tallest and most inaccessible in the neighbourhood. When on the rocks, a crevice or a shelf is selected, and here the nest is often very bulky, the accumulation of years and years. The outside is made of sticks and branches of heather; finer twigs and pieces of turf are used for the inside, which is finally lined with a thick warm bed of moss, wool, and feathers. It is very similar in appearance to the nest of the Rook, but is rather deeper, and the lining is perhaps more copious. The eggs of the Hooded Crow are four or five in number, precisely similar in size and colour to those of the Rook and Carrion Crow, being greenish-blue or pale green in ground colour, spotted and blotched with greenish-brown of various shades and pale gray. Only one brood is reared in the year, but if the first eggs are taken others will generally be laid.

Both birds assist in incubation, the sitting-bird often being fed on the nest by its mate; and as soon as the young are hatched the depredations of the parents increase. Made bold by their hungry clamouring young, they are a perfect pest to the poultry-keeper, and carry off everything eatable they can find. The young are even fed and tended for some little time after they quit the nest. In many places where the geographical ranges of the two species impinge, the Hooded Crow regularly interbreeds with the Carrion Crow, and every intermediate form between the two birds can be obtained. Most of this interbreeding takes place in Western Siberia, but in Scotland these two Crows occasionally mate together and produce more or less fertile offspring.

In England the Hooded Crow is well known in many districts as a regular winter migrant, arriving in October and leaving in March. Most of these birds are from Scandinavia ; they cross the North Sea by way of Heligoland, and arrive on our low-lying eastern coasts about the time the Woodcock puts in an appearance. In England the Hooded Crow is best known as a coast-bird, although a few stray to inland districts, generally following the course of large rivers. On the noble expanses of salt-marsh that gird the Wash on the coast of Lincolnshire the Hooded Crow is particularly numerous, and its habits may be studied there with ease. Its migration to this country is an intensely interesting sight to the lover of birds. For weeks in the autumn hundreds of thousands of Hooded Crows may be seen flying slowly from across the sea in one long straggling stream, now in twos and threes, or in little parties, and occasionally in great rushes. This bird migrates exclusively by day, and of the vast numbers that pour in from the north and east many remain on these extensive salt-marshes for the winter, and many more follow the coast still farther south. During its winter sojourn here it very closely resembles the Rook in its habits. It frequents the broad Lincolnshire fields close by the sea, where dykes take the place of hedgerows, and where the autumn-sown grain is eagerly fed upon. They are very gregarious and sociable now, and settle in large flocks upon the fields and in the pastures, feeding with Rooks and Starlings. Occasionally they are seen on turnip fields and stubbles, in company with Wood Pigeons and Stock Doves. But their great feeding-ground is on the interminable wastes of salt-marsh and mud, where they often congregate in thousands on the spots where food chances to be plentiful. Upon these marshes it searches principally for sand worms, small crabs, and cockles. The latter shellfish it digs for in the sand, and then carries up in the air for a considerable height to drop down and break

open. I have seen it when so engaged follow the falling cockle so quickly as to be on the ground almost as soon as its quarry. With the marsh-men the Hooded Crow bears a bad name, from his habit of devouring the birds caught in the flight-nets. On these extensive marshes miles of netting are set to catch the hordes of wading and swimming birds that fly over them. These nets are visited every morning by their owners, but too often the crafty Hoodie has been there before them—even before the tide has ebbed, and carried off most of the birds, and so mangled the remainder as to render them totally unfit for the markets. Many a wounded bird that has managed to escape from these snares or has eluded the gunner, falls a victim to the cunning Crows that search every nook and corner of these tide-washed wastes for food. In spring and autumn the Hooded Crows often congregate into enormous flocks, probably for the purpose of pairing, and not as “Crows’ courts,” assembled to administer justice and punishment upon some offending member of the community, as even some nineteenth-century ornithologists assert to be the case.

In winter, when these mudflats and marshes are sometimes strewn with big blocks of drifted ice, and the surrounding fields are deep in snow, the Hooded Crows come close to the houses and farmyards to pick up any refuse they can find, often perching on the corn-stacks and pulling out the straws, or making a meal on the refuse of slaughter-houses used for manuring the land. As soon as spring returns and the Scandinavian forests are free from frost, the Hoodies desert the Lincolnshire mudflats and marshes and retire northwards to rear their young. By no strange chance is a bird of this species seen here during the summer, although there are plenty of suitable nesting-places to be found. So regular are the movements of this bird, that the fisher folk will tell you the Hooded Crow and the Swallow are never seen in the air together.

THE GREEN WOODPECKER

(*Gecinus viridis*)

THE Woodpeckers must be classed amongst our rarest birds—nowhere can they be said to be abundant, and there are plenty of wooded districts in England where a Woodpecker is never seen. This scarcity, viewed in relation to their fecundity, is somewhat puzzling to the naturalist. Although they multiply so quickly (as many as six young birds being reared in a season), their struggle for existence must be a very severe one, and only a small percentage survive the contest. Want of food is most probably the great secret of their rarity. They are not migratory birds, and as they live almost exclusively on insects their sustenance is a very precarious one. As a proof that this mortality arises from such a cause, we know that in the Tropics Woodpeckers rank amongst the commonest of birds, simply because the nature of their haunts is favourable to their wants and conditions of existence—insect life, the Woodpecker's principal food, being remarkably abundant in the equatorial forests.

The haunts of the Green Woodpecker are in the southern woods and forests, its place being taken in the north by the Great Spotted Woodpecker. The Green Woodpecker is the largest of the British species, and one whose habits are particularly easy of observation in those districts where the bird is common. It is, of course, a bird of the trees, and rarely strays far from the woods. It may sometimes be seen

in the quiet country parks which are thickly studded with old timber, flying in peculiar waving course from tree to tree, uttering its loud notes as it goes. Whether observed in the open or deep down in the silent woods, its actions are much the same. It usually begins its devious wanderings over a tree near the roots, gradually working upwards, exploring many of the larger limbs as well as the knotted, gnarled old trunk as it proceeds, and then flying onwards to the next tree, where precisely the same course is repeated. Where the trees are very close together it does not descend to the ground every time, but flies from one trunk to another. The Green Woodpecker spends by far the greatest part of its time in one constant search for food. Every little chink and crack and knothole is inspected in turn—every bit of faulty bark or decaying wood is carefully sounded. By some strange faculty of perception the bird seems to know where insects or larvæ are lurking under the bark or in the rotten wood, and he labours diligently with his chisel-shaped beak, using it almost like a pick-axe, until the prize is reached. When searching the rugged old trunks of the oaks and elms and beeches, his actions are very interesting. He runs from side to side, pauses, creeps forward again, returns, then clings to the under surface of a broad limb, all the time supporting himself with his stiff, pointed tail, which serves the purpose of a third leg. Every now and then you lose sight of him as he runs to the opposite side of the tree; then you see him peeping at you, as it were, with only his red head visible, and all the time his lusty taps wake the silence of the forest. As he flies onward you cannot help admiring his rich yellow lower back, which shows out very conspicuously when the wings are opened. He searches over a tree in a very short time, but frequently stays to break away the wood and bark which conceal his insect food.

Of all birds the Woodpeckers are perhaps the least

inclined to be gregarious or sociable. Rarely indeed do we see more than a pair of birds together, and in most cases only one. Its singular cry once heard can never be forgotten ; and the countryman will tell you that it is most frequently uttered before rain. We hear it most often in the bird's breeding season during spring and early summer. It may best be described as a clear *hi-hi-hi* rapidly repeated, and resembling a loud laugh. When signalling to its mate it taps the trunks or branches loudly and rapidly, producing quite a jarring noise. I have sometimes seen the Green Woodpecker alight on an old gatepost by the woodside and search for insects ; and it may be repeatedly surprised on the ground in the quiet corners of the woods and plantations, or even in the open park. It has visited the ground to dig up the ants' nests and to regale itself on the moving masses of ants and larvæ. On the ground it is awkward and clumsy enough, its short legs preventing it from moving about as gracefully as most birds do. Woodpeckers are shy and wary creatures, yet with a little more caution than usual we can generally approach them sufficiently near to watch their interesting movements on the trees. I love to conceal myself amongst the tall bracken in the park or more open parts of the forest, where the deer graze peacefully under the noble trees, and wait and watch for the Green Woodpecker. His laugh mayhap is sounding in the distance ; he may not come my way for a long time, but I can find plenty to interest me among these grand old trees. Creepers, Starlings, Tree Pipits, Wood Pigeons, Stock Doves make them their headquarters and imbue them with life ; whilst the myriads of bees in the fragrant lime trees yonder soothe me with their constant dreamy hum. I have known the Green Woodpecker search the trees all around me, and have been able to watch his every movement when I have been concealed in this manner.

By the middle of April the Green Woodpeckers are busy

at their nesting-place. They pair for life, and the old nest is used year after year in a great many cases, always provided that it is not full of water or already occupied by a Starling or a Titmouse. The Green Woodpecker breeds in a hole in the trees, generally selecting some stump which is rotten and easily bored. I have never known him tunnel into sound timber. He has no cause; besides, his bill, strong as it is, would not be able to excavate a chamber large enough for his needs in the short time he devotes to the operation. If the outside of the timber is sound, the decayed part is soon reached, and the birds display wonderful power of discerning which trees are sound and which are decayed. The tree may seem sound enough to the eye, but as soon as the bark and a thin crust of growing wood are pierced, the centre of the trunk or branch is soft as touchwood and easily scooped out. For a little distance the hole is bored horizontally; then, as soon as the birds get sufficient room to turn, a perpendicular shaft is sunk for a foot or more, the bottom of which is enlarged into a little hollow in which the female lays her eggs. Both birds assist in this work of excavation, and most of the refuse dug out is carried away and dropped at some distance from the tree. Nest there is none; the six or seven glossy white eggs rest on the wood-dust and chips at the bottom of the hole. The first egg is generally laid as soon as the hole is completed, and the full number is deposited by the first week in May. Their large size effectually prevents any confusion with the eggs of the other British Woodpeckers. I have known several instances where the sitting-bird has been drowned in the nest-hole on her eggs and young during exceptionally wet weather—a touching instance of maternal love, for there can scarcely be a doubt that the bird could readily have escaped had it so desired.

The food of the Green Woodpecker is composed of the various kinds of insects that infest the timber, together with

ants ; and it is said, although I have never observed such to be the case, occasionally to eat acorns and nuts. The young are fed on insects and larvæ, and we may watch the old birds tend them for some time after they leave the nest. Only one brood is reared in the year ; but if the first lot of eggs be taken, the birds will often lay a second clutch, in some cases making an entirely fresh hole for their reception.

In some parts of England, especially in the southern counties, the Lesser Spotted Woodpecker (*Picus minor*) is still by no means an uncommon resident species, although locally distributed. Its small size—it is the smallest of the British Woodpeckers—readily distinguishes this species from its congeners. It loves the woodland districts and the fields where the hedgerows are thickly studded with tall trees. In its habits it closely resembles its allies, but perhaps shows greater preference for the tops of trees and skulking among the slender branches, where its actions are very Tit-like. Its food is insects. Paired probably for life, the same nesting-hole is often frequented year after year. This hole, about twelve inches deep, is sometimes selected ready-made, but more often is excavated by the birds themselves. The eggs are laid early in May, are from five to eight in number, pure and glossy white, and closely resemble those of the Wryneck.

THE WRYNECK

(*Iynx torquilla*)

THE Wryneck, although it can scarcely be regarded as a rare bird, is one that is somewhat locally distributed. It derives its name from its peculiar habit of twisting its head from side to side, and is closely allied to the Woodpeckers, although it differs from those birds in many important particulars of habit and structure.

It is a migratory bird, and arrives here early in the vernal year, a little before the Cuckoo makes his appearance, so that he is known to the country people as the "Cuckoo's Messenger," or "Cuckoo's Mate." The Wryneck is not so strictly confined to the woodlands as the Woodpeckers, because its food is not sought so much upon the timber. It frequents the cultivated districts, well wooded but open localities, orchards, copses, and plantations; and not unfrequently on the border of the moors its shrill whistle may be heard. It is a shy and wary little creature, and soon takes shelter amongst the foliage when it finds that it is being observed. The love-note of the male Wryneck is only heard in the breeding season, and ceases soon after the female begins to sit. It is a loud, clear, shrill, and oft-repeated cry, resembling the word *heel*, and cannot well be confused with the note of any other bird. It is a remarkably piercing cry, and may be heard for a considerable distance, especially across open country. I am not aware that the Wryneck utters this note

when on the wing, but always when at rest, either sitting on the ground, or on a dead stump, or when clinging to the tree trunks. When alarmed it utters a sharp and oft-repeated metallic clicking-note, and frequently taps very rapidly and loudly on the branches. When you examine the Wryneck you will find that it differs considerably from the Woodpeckers in its appearance. In the first place, its plumage is soft and beautifully mottled like that of the Goatsucker; then its beak is not formed for digging into decayed wood and bark, and its tail is as soft and pliable as that of a Robin, instead of being stiff and pointed as is the case with the Woodpeckers. Still the Wryneck is beautifully adapted to its ways of life, as we shall fully learn after studying its habits and economy. The Wryneck obtains its food almost exclusively with its tongue, and its tail is never used as a support, for the bird rarely climbs about the trunks or branches. Nevertheless its outer toe is reversible, like that of most Picarian birds, and its feet are formed for climbing; but this is doubtless a long-inherited character from the common ancestors of the Wrynecks and the Woodpeckers. If you watch the Wryneck closely when in the branches, you will find that it sits like any other ordinary perching bird; and should you observe it on the rugged trunk of a tree, you will invariably find that it sits sideways on the bark and never attempts to climb like a Woodpecker, but pursues a sidelong course when exploring the nooks and crannies for insects. Its plumage is eminently protective in colour, and harmonises closely with the brown bark and silver lichens. The Wryneck may sometimes be seen frequenting the slender branches, picking insects from the leaves, and occasionally fluttering into the air to catch them as they pass by. When flying from tree to tree, or from one orchard to another, its course is undulating, something like a Woodpecker's.

The food of the Wryneck is composed of various kinds of

insects and their larvæ, especially small caterpillars. But the bird's principal fare, I believe, is ants and their eggs, for obtaining which it is admirably adapted. Were you to dissect a Wryneck you would find that the two posterior branches of the bones of the tongue are considerably elongated, and the muscles attached to them highly developed, by which means the bird is able to extend its tongue, the tip of which is hard and horny, to a considerable distance beyond the point of the beak. You will also find, in pursuing your investigations further, two long glands beneath the tongue, which open into the mouth and secrete a viscid fluid upon the tongue. After making yourself so far familiar with the little Wryneck's anatomy, repair to some ant-hill in its haunts, and observe closely its method of obtaining its meal. Mark with what amazing rapidity the tongue is shot forth, and note what part the sticky fluid plays with which it is anointed, by causing the ants to adhere to it. So quick are the movements of the tongue that the eye cannot follow them, and the poor ants and their eggs seem drawn towards it by some magnetic influence. The hard horny tip to the tongue is of service, and enables the bird to explore with that organ the soft earth which conceals its prey. When you still further dissect a bird of this species you will find a small quantity of grit and dirt in its stomach, which circumstance has puzzled not a few naturalists. Its presence here is due to accident alone, and is conveyed into the bird's mouth through sticking to its tongue with the ants. The Wryneck does not, however, obtain all its food from the ant-hills, for it searches the lichen-covered branches and moss-grown decaying stumps, picking out the various insects that lurk in these situations. The Wryneck not only visits the ants' nests, but it watches out for that little insect as it journeys to and fro. I once came across a narrow stream of ants which extended from some barley fields far out into the sand of the Sahara Desert, where

they had made their nests. They were conveying the grain away to their nest; but the Wrynecks, which were common enough in the beautiful oasis adjoining, had found them out and were eating them in thousands. I may also mention that here, in Africa, in its winter quarters, it is very fond of frequenting the rough stems of the date palms, and often perches on them and quietly waits for insects to fly past, when it flutters out and secures them. It is a very silent bird in winter. I have never heard it utter its well-known summer cry, but its usual clicking call-note sounded repeatedly from the date palms and pomegranate trees. It is just as wary here as in England, and seldom allows a near approach.

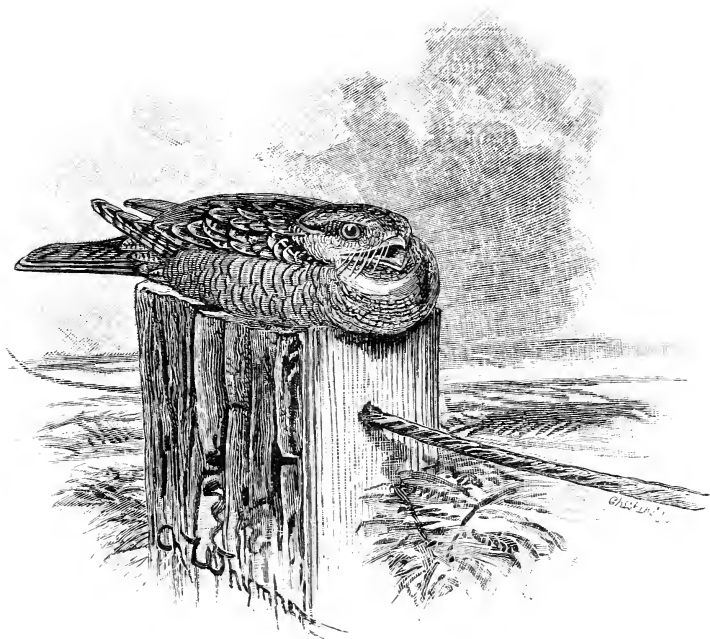
It is not improbable that the Wryneck pairs for life, and that the young birds of the previous season mate some time before their arrival in this country. I saw them in pairs in Northern Africa, previous to their departure for their summer haunts, and it is certain they arrive here in England already mated. The Wryneck's breeding season is in May, and its nesting-site is somewhat varied in character. It takes possession of a hole in the forest trees, or in the trees of the orchard, or not unfrequently in a hole in a decayed stump in the woods, or even in the hedges by the wayside. Here, for instance, is a tall holly stem, blighted and fast crumbling away before the wintry storms. It is surrounded with perennial branches, the clump of hollies having closed up round it as if to hide and shelter it in its old age. In a hole in this stump a pair of Wrynecks have made their nest for several seasons. The entrance is well concealed by the surrounding foliage, which affords the shy birds that ample cover which they love, especially during the season of reproduction. Let us examine it closely. By breaking away the outside wood, which is little stronger than paper, we are able to reach the cavity which contains the nest. It is about

twelve inches from the entrance ; and we find that the Wryneck is no nest-builder, and that her eggs are laid on the powdered wood and dust at the bottom of the hole. We find the female Wryneck upon her eggs, remaining brooding over her treasure until removed by the hand, as is the case with most species nesting in holes. We heard her utter warning hisses as we broke the wood away, and when taken in the hand she repeats this startling sound, which closely resembles that made by a snake. From this peculiar note the Wryneck is known in many localities by the name of "Snake Bird." She also keeps turning her head from side to side with singular contortive movements, giving herself a most strange appearance, well calculated to alarm the inexperienced observer. I have also known her to feign death when taken in the hand ; but if you relax your hold she generally takes advantage of the proffered freedom and flies away. The Wryneck never excavates a hole for itself in which to rear its young, but always finds one ready-made, just like the Titmice and Starlings do.

The eggs of the Wryneck are from five to eight in number, —in rare instances you may find even nine, pure and spotless white, and polished like those of the Woodpecker's, which they resemble in every respect save that of size. You may remove the eggs of the Wryneck, just as you may take those of the Starling, and the old birds still frequent the place, and others will be deposited in the same hole. Egg after egg may be removed and still the female lays more, continuing to do so in some cases right through the summer, and returning to the old unfortunate quarters to repeat her efforts the next spring. The Wryneck's fecundity is indeed amazing, and she has been known to produce as many as forty-three eggs in a single season. Pity that the poor birds were harassed so persistently ! Only one brood is reared in the year, and the old birds and their young tarry on our shores but a short time

after the latter reach maturity, migrating to their winter quarters in Africa during the month of September. In their winter home they become much more sociable, and sometimes unite into little flocks which roam about in quest of food.

One more word on the Wryneck's fecundity. Comparatively speaking this bird is not a common one; hence we must conclude that its rate of mortality is high. Subsisting on a somewhat precarious diet—for its chief food the ants seldom occur in great quantities two seasons together—its numbers must be considerably reduced during unfavourable seasons whilst on our shores. Then again the dangers which surround it in its winter home, and the perils of its long journey to and fro in spring and autumn, must thin its ranks. As we have already seen, this bird lays a large number of eggs, and is able to replace them if they are destroyed, so that by this means it contrives to keep a place among existing species. Its struggle for life is undoubtedly a severe one, and its great fecundity most probably saves it from complete extinction.



THE NIGHTJAR

(*Caprimulgus europæus*)

THE Nightjar, better known in many places as the Goat-sucker or Fern Owl, is one of the most interesting birds that flies in the evening's dusk or under the murky sky of night. It is a summer visitor to this country, arriving here about the middle of May, and returning south again near the period of the autumnal equinox. As the Red Grouse loves the heather, so does the Nightjar love the fern and bracken, and its favourite haunts are on extensive heaths where bramble and brake mingle with the heather. It also delights to frequent the rough broken ground on the borders of the forest, and the open spaces in the woods, where undergrowth is replaced by briars and bracken, and it is not unfrequently

flushed from the edges of the pine woods near the moors. The Nightjar is a thorough bird of night, and is never seen abroad in the bright daylight unless it has been disturbed from its sleeping-place. When flushed in the daytime it rises in a bewildered sort of manner, tumbling aimlessly about in the air, and soon seeks a refuge amongst the tall bracken or in the dense branches of a tree. It is frequently flushed from the country roads, where it lies close until nearly trod upon, so much does it resemble a piece of cow dung or a flat stone. It often sleeps on some broad branch amongst the thickest foliage, always sitting along the bough, never across it as most other birds do. This peculiarity in perching is for the purpose of concealment, and when the bird is crouching close to the bark it looks like a lump of lichen or gray moss. A large and conspicuous moth found amongst birch trees always alights on the bark in a certain attitude for a precisely similar purpose. The Nightjar is one of the first nocturnal birds to fly abroad at dusk, and its peculiar note may be heard here and there amongst the trees and fern before the sun is completely hidden by the hills.

Few things are more pleasant in the refreshing cool of evening, after the broiling heat and oppressiveness of a mid-summer day, than to stroll on to the fern-clad commons and by the woodsidcs to watch the aerial gambols of the Nightjar. When the evening's gloom is falling, in the dreamy afterglow of a summer sunset, and the shadows broaden as the last rays of light glimmer on the tree-tops, you may hear the Nightjar's familiar *churr* from the woods. As the darkness deepens and the glow-worms glisten amongst the dewy grass, the birds come out from amongst the trees and hawk about the air above the bracken and brambles in search of food. You may see them repeatedly hover in the air above your head, the big white spots on the wings and tail showing out very distinctly; and the soft flapping of their wings is scarcely

audible as they turn and twist in chase of the night moths and the cockchafers. Ever and anon they mount above the tree-tops for a moment, and their dusky forms show out against the clear western sky. If you keep very quiet they probably alight on some old stump, or perhaps on the top bar of a gate close at hand; they are not shy birds, and fear no danger. When sitting on the stumps or fences their actions are very like a big Flycatcher. Every now and then they sally into the air to catch a passing moth or beetle, or to flutter over the tall stems of bracken, and then return to their perching-place. Sometimes a bird will be joined by its mate when so sitting, and I have seen them feed each other on such occasions. As the night deepens the Fern Owl's activity increases, and they dart and glide more swiftly amongst the trees and above the open spaces, as though they had shaken off all drowsiness and were now thoroughly awake. As they hold high carnival in the balmy stillness of the midsummer nights, we have good opportunity of listening to their singular notes. When on the wing the cry is a clear and rapidly repeated *co-ic, co-ic*; but when at rest the bird utters a churring noise, often so loudly as to make the surrounding air sensibly vibrate. I have never heard the Nightjar "churr" on the wing, nor have I ever heard the chattering cry when the bird has been at rest.

Like too many other birds whose habits lead them abroad during the hours of darkness, the Nightjar has few friends. The poor Owls are persecuted because they hunt at night when no man sees their usefulness, and the unfortunate Nightjar suffers from the same circumstance. He has been accused of sucking the teats of the cows grazing in the pastures at night, but the poor bird only flits amongst them to catch the beetles and moths which are disturbed from the meadow grass by the heavy tread of the feeding animals. You may watch him hunt the meadows when the moon is at the full, and observe his every action as he flutters and

poises over the grass, but you will never see him interfere with the grazing cows. Gamekeepers too can never be convinced that he is not a Hawk, and they shoot him down at every opportunity. I once knew a gamekeeper, who admitted the perfect harmlessness of this charming bird, and whose only excuse for shooting it on every occasion was because he thought it "a nasty ugly beast, no good to anybody." And this man would grow quite enthusiastic over the beauties of bulldogs, and call ferrets pretty little things!

The Nightjar is not at all gregarious, but in districts where it is common half a dozen may often be seen over one expanse of bracken. It is possible that this bird mates for life, as in spring it appears in its summer haunts in pairs, and may be so observed during the whole time of its stay. The Nightjar is active and graceful enough in the air, but when on the ground is comparatively helpless. Its short legs make it walk with difficulty, so that when it once alights, it generally remains stationary until ready to fly again. Much difference of opinion and more controversy have arisen over the serrated middle claw of the Nightjar. Some naturalists aver that this comb-like claw is used in capturing prey; others have affirmed that it is employed in combing out the long stiff rectal bristles and to rid its plumage of parasites; whilst one or two writers have gone so far as to assert that it is of service to the bird when sitting length-wise on the branches. It may be used for all these purposes; but I consider it extremely doubtful that such is the case, and am much more inclined to look upon this serrated claw as the rudiments of a structure which was once of service to the Nightjar or its ancestors. Several other species of birds, very remotely allied to the Nightjar, as, for instance, the Heron, also possess this peculiarity, which I am disposed to look upon as being now in a very deteriorated stage of development through disuse.

The Nightjar lives almost entirely on insects. It catches the various species of night-flying beetles and the large-bodied nocturnal moths which dreamily flutter over its favourite haunts. The ghost swift-moth is eagerly sought after; and I have sometimes watched this pretty bird feeding on the meadows near the woods where this insect has been flying in abundance in the bright moonlight, picking them from the tall stems of herbage as it fluttered lightly over them, or swept impetuously up and down under the drooping branches of the trees. It is specially fond of cockchafers; and all the indigestible portions of its food are cast up in the form of pellets.

The Nightjar is one of the latest birds to breed, and its eggs are seldom found before the beginning of June. Summer reigns supreme during the breeding season of this interesting little bird; and almost as soon as the young are safely reared it begins to think of Africa and the south. The Nightjar's nest is only a little depression in the ground which is selected amongst the bracken and the heather in its haunts. It often chooses a site on the common or heath where the vegetation is scanty; and I have seen its eggs at the foot of a tree in a little clearing in the forest, and under a gorse bush. The eggs of no other British bird can be confused with those of the Nightjar, and few are so beautiful in colour. They are two in number, and very similar in shape to those of the Swift, but are about as large as those of the Turtle Dove, pure white or pale creamy-yellow in ground colour, mottled, veined, clouded, and streaked with various shades of brown and violet-gray. They vary considerably in the character of the markings, some being streaked and pencilled like a Bunting's egg, others boldly splashed and blotched with rich colour. The Nightjar occasionally removes her eggs to safer quarters if she is much disturbed during the period of incubation. She is a remarkably close sitter, depending for her

safety on the wonderful way in which her mottled brown plumage harmonises with the russets and browns and grays of surrounding vegetation. The eggs too are very protective in colour, and require sharp eyes to find them as they lie so exposed on the bare ground. The Nightjar only rears one brood in the season, but if her eggs are taken, she will lay again usually not far away from where her first two were deposited ; but the second time she generally only lays one. Sometimes the sitting-bird feigns lameness when flushed from her eggs, and reels and tumbles along the ground trying to draw all attention away from her treasures. The young, as soon as they are fledged, also exhibit considerable cunning, hiding themselves amongst the moss and herbage at the approach of danger. They are fed and tended by their parents for some time after they are able to fly, and may often be seen sitting on the branches, or even on a wall, waiting for the old birds to bring them food.

The Nightjars disappear in autumn as suddenly and as quietly as they appeared in early summer. Previous to their departure they are silent, and they migrate at night to their distant quarters in the oases of Northern Africa.

THE ROCK DOVE

(*Columba livia*)

THE wide ranging Rock Dove is one of the most interesting of British birds, for it is undoubtedly the original stock from which all the varieties of tame Pigeons have descended. Its white rump distinguishes it from all its congeners—a peculiarity which most tame birds also possess. Neither the Stock Dove nor the Wood Pigeon lend themselves to domestication; they have that in their nature which no art of man can overcome—an inherent timidity, and apparent incapacity to reproduce their species under the restraints of captivity. Singularly enough the Rock Dove is inseparably associated with some of the wildest scenery our islands can boast. It may be said to be confined exclusively to the coast—to the bold rocky headlands and sea-girt cliffs, and to rocky islands, especially those where the precipices are full of caves and fissures, in which the bird can rear its young and find shelter from the elements. It may be that this rock-haunting peculiarity is the one great secret of its readiness to become domesticated, the buildings and dovecots of man easily taking the place of the cliffs and the caves of its native wilds. In some few inland districts the cliffs are frequented by Rock Doves. These are undoubtedly tame birds, which have become feral, and have gradually reverted to the colour of the original stock. They mix with the tame Pigeons of the surrounding dovecots, and often interbreed with them, so

that the young naturalist may rest assured that the true wild Rock Dove is only to be found on the maritime cliffs.

As you wander along the wild shore at low water beneath the lofty wall of cliffs, you will often startle the wary Rock Dove from its haunt far above your head. Or when rowing past the rocks, the sound of your clumsy oars in the row-locks frightens the Doves from the shelves and fissures; and as you approach the entrance of the black-looking caves, in which the water is ever dashing with a thunder-like roar, the birds hurry out on rapidly-beating wings to a safer refuge in the cliffs. Not unfrequently when you are wandering along the breezy tops of the cliffs, knee-deep in heather, seapinks, and other vegetation, you will see the Rock Doves fly out from some part of the rocks below, and hurry out for some little distance over the sea, then suddenly turn and fly to land to feed on the rough pastures or the weedy stubbles. They are more or less gregarious birds all the year, and may often be seen feeding in large flocks, the essence of wariness. They run about the ground in true Pigeon style, bobbing their head at each step, picking up the seeds and scattered grain. If alarmed they fly up, but never by any chance take refuge in a tree, either flying off to a more distant part of the fields, or returning to their haunts on the adjoining cliffs. The flight of the Rock Dove is very powerful, performed by a series of rapid beatings of the wings; but sometimes the bird sweeps down from the sky with wings held perfectly still into its gloomy cave or on to the pastures. It is capable of flying for very long distances at a time; and the natives of St. Kilda, every one of them practical ornithologists, told me that the Rock Doves that breed there flew across to the Hebrides every day to feed, a distance of seventy miles! The note of this bird is very similar to that of the Ring Dove, a soft full *coo, roo, coo*, variously modulated when the bird is excited by the tender passions of love. It is very noisy in

the spring and early summer, but as autumn draws on it becomes much more silent, and it is rarely if ever heard in winter.

The Rock Dove is an early breeder, commencing operations long before the winds of March are hushed, but the nesting season is not at its height until April and May. Like other birds of the Pigeon tribe, it rears several broods in the season, and fresh eggs may be obtained as late as September. Wherever it can obtain a cave for its purpose it always prefers one ; but in districts where caves are wanting it is content to build its nest in the crevices and crannies of the rocks. Sometimes the cave is accessible at low water without the aid of a boat ; but in most cases the sea is ever dashing into its gloomy recesses with a dull booming roar, sending the spray in showers far up the walls. Amongst this constant turmoil of water the Rock Doves rear their young, making their slight nests on the ledges and amongst the fissures in the roof and sides of the cavern. The nests are slight structures, made of a few dead twigs, a little dry grass, and perhaps a scrap or two of seaweed. They are very flat, and of course long before the young have left them are caked and matted together with the excrements of the birds. In many cases several nests are built quite close together, and generally, if the colony be a large one, fresh eggs, eggs in every period of development, and young birds in all stages of growth, may be obtained at the same time. The eggs are two in number, somewhat elongated, and pure white in colour. Both parents take it in turns to hatch them, and the sitting-bird is regularly fed by its mate. The young birds do not quit the nest until well able to fly, and are then soon deserted by their parents.

Except in the very severest weather, the Rock Dove may generally be found in its usual haunts near the sea ; but in winter it sometimes wanders southwards, or frequents the weedy pastures and stubbles near the coast. It is generally

seen in flocks, and may sometimes be observed feeding with Thrushes and Finches. It occasionally visits the rocky beach and the rough ground near the sea to feed on the seeds of weeds. The food of the Rock Dove is chiefly composed of grain and seeds of all kinds, which it picks up from the lands and pastures near the sea, as well as on the sloping cliffs. This bird is a voracious eater, and takes great quantities of grain from the newly-sown land, as well as from the corn-fields and stubbles. It also eats the buds and shoots of herbage.

It is worthy of remark that the Rock Dove is one of the most constant of birds in the colour of its plumage—varieties in a wild state being practically unknown; but under the influences of domestication it varies in a most curious manner, both in size and form and colour, and even in several parts of its structure. It is one of the most wonderful instances of the prodigality of Nature in producing endless variations of form and colour as soon as the checks to those variations are removed. The Rock Dove's economy demands a certain uniform standard of colour, of structure, and of form, which is in harmony with its ways of life in every respect, and up to which it is rigorously kept by Natural Selection. But let this check be once removed, and variation in many directions asserts itself, and the inevitable result is what we now see in the dovecots of civilised man—an almost endless variety of Doves, all sprung from their common ancestor, the Rock Dove, and all with a more or less strong tendency to revert to the colour of the original stock if suitable conditions arise.

THE STOCK DOVE

(*Columba oenas*)

FEW thoroughly British birds are so little known as the Stock Dove. It is common enough in all suitable districts, but owing to the diversity of the haunts it frequents, and its shy and retiring disposition, much confusion has arisen between this species and its congener, the Rock Dove. The Stock Dove frequents rocks, both inland and maritime, as well as woodland districts, but the Rock Dove only lives on the ocean cliffs. The Stock Dove may be readily distinguished from the Rock Dove by its rudimentary wing-bars, and by the absence of the white rump and lower back. Much confusion also exists regarding the word "stock," as applied to this species. Some writers have attempted to prove that the word denotes this species as being the original "stock" from which all the domestic races of dovecot Pigeon have descended; but there can be no doubt whatever that the bird acquired its name through nesting in the "stocks" or stumps of pollard trees, and frequenting the "stooks" or stacks of corn and other grain placed in the fields ready for carting.

The Stock Dove loves the woodland districts best. It may sparingly frequent the more open country—even quarries on the moors and downs, rabbit warrens, and the ocean cliffs; but it is by far the most abundant in the woods and forests, especially where the timber is old and decayed. It is a much commoner bird than is generally supposed; but most game-

keepers and countrymen know this species by the name of "Blue Rock" or "Rockier." Although a shy and extremely cautious bird, it is by no means so much so as the Ring Dove, nor will it forsake its nest so soon as that species if it is disturbed. I am often allowed quite a near approach when the bird is seated on a favourite perch on the topmost branches of some noble forest tree, whither it habitually repairs after feeding on the neighbouring fields, and I am permitted to watch its actions apparently unnoticed, provided I exercise a little caution. In studying the economy of this graceful bird you will find that it is much more silent than its congener, the Ring Dove, and its note is seldom heard, except in the pairing or breeding season. Its call too is different from the Ring Dove's; not nearly so soft and soothing, being a hoarse guttural *coo* repeated most rapidly and earnestly in the vernal season. Stock Doves are fond of bathing, as is the case with most birds of this order; and a little before sunset I often pause to observe them take their evening bath and drink previous to retiring to roost amongst the ivy or in the thick gloomy branches of the evergreens.

The Stock Dove, like all other members of the Pigeon tribe, is a life-paired species, and frequents certain breeding grounds for years, provided it is left unmolested. Its breeding season commences in April, and several broods are usually reared in the season. Indeed, as late as October it is not uncommon to find young birds scarcely able to fly; and I have known their nests to contain eggs by the second week in April. The site for the nest is a varied one, yet it is always well concealed. An old Magpie's nest is not unfrequently chosen—so, too, is the deserted "drey" of the squirrel; and the disused Sparrow-hawk's cradle, should it be well concealed amongst ivy, is a favourite place. Indeed, the Stock Dove has a partiality for ivy almost as great as the Wood Owl, and when it builds its own nest per-

haps by far the most frequently places it among the perennial foliage of that plant. The above situations are chosen where the timber is but little decayed. Where, however, age and the wintry blasts have left their mark upon the trees, and hollow trunks and decaying limbs abound, you must search for the Stock Dove's eggs in holes similar to those which the Jackdaw selects for domestic purposes. So far as my own observations extend, the Stock Dove is decidedly a hole builder; for if holes in trees are wanting it seeks the shelter of deserted nests of other birds; or failing them, the dark seclusion of an ivy-covered tree, where, deep among the glossy foliage, it can rear its young unseen and in peace. In treeless districts a hole in the side of some quarry on the moors, or the crevice of a cliff, is selected, and in warrens it shares the burrows with the rabbits. The nest of the Stock Dove is very slight—ruder perhaps than the Ring Dove's, and in many instances a nest is dispensed with altogether. When in the branches it is merely a few twigs—a slight trellis-like platform of sticks; and when in holes of timber, or on the tops of pollard trees, the decaying wood or mayhap a few straws form the bird's only bed. The eggs of the Stock Dove are never more than two in number, and are pale creamy-white in colour—a peculiarity which always serves to distinguish them from those of the Rock Dove and Wood Pigeon. Throughout the breeding season the Stock Dove is a remarkably shy and retiring bird, and but rarely indeed betrays the whereabouts of its nest. Should you approach the nest the old bird often remains sitting upon the eggs or young until almost touched by the hand, and in some cases allows itself to be captured, especially if the eggs are much incubated.

There is another point in the economy of the Stock Dove which the careful naturalist will not fail to notice, and that is, the bird's singular partiality for the company of its own kindred during the nesting season. Unlike the Ring Dove,

which is seldom gregarious except during autumn and winter, the Stock Dove is social at all seasons, and breeds in colonies to a great extent. I have not unfrequently found two of their nests in the same hollow tree, and as many as six within a few yards of each other, as is the case with Starlings and Jackdaws. The young Stock Doves remain in the nest until they are able to fly, being fed on the semi-digested food swallowed by their parents. They mature slowly, but as soon as they leave the nest appear to be deserted by their parents for ever.

The food of the Stock Dove, as far as I can determine, is exclusively of a vegetable nature. In seedtime the bird is a regular visitor to the fields of oats and other grain ; and in districts where the birds are plentiful they become very troublesome to the farmer. It also eats the seeds of weeds, and is very fond of acorns, buckwheat, beech-mast, and even blackberries. Peas and beans are also its favourite fare, and when hard pressed by hunger it will eat the tender shoots of the autumn-sown grain and the young leaves and sprouts of turnips. The Stock Dove spends the greater part of the day in the open country, on the fields, where it frequently mingles with flocks of tame Pigeons from the adjoining farmhouses. Its flight is quick and light, performed by rapid beats of the wings, but sometimes the bird darts down from the sky on almost motionless wings into the friendly cover of the forest. When flushed in the woods it hurries off with great rapidity through the trees, flying in and out amongst the trunks with amazing speed and dexterity. It perches in trees as much as the Ring Dove, and may sometimes be seen running along the broad horizontal limbs paying court to its mate.

In autumn the Stock Dove congregates into enormous flocks, mingling freely with Ring Doves, and frequenting the stubbles where they search for the scattered grain. The broad corn-lands and bean-fields are the Stock Dove's favourite autumn and winter pastures. There large flocks,

after feeding in the fields all day, betake themselves at dusk when gorged with food to the nearest fir plantations where they roost. They repair to the bean- and pea-fields before the crops are carted, and perch upon the stacks or "stooks" to feed ; and in severe weather they not unfrequently venture into the farmyards to pick up any stray grain they can find. If the Stock Dove robs the farmer of his grain and other seed crops, it makes ample amends for its depredations in consuming millions of seeds of the most troublesome weeds, such as charlock and dock, which, if not kept in check, would soon change fertile fields into unproductive wastes.

The Turtle Dove (*Turtur auritus*) here claims a few words of passing notice. It is the most locally distributed of all our British Pigeons, and, unlike any of them, is a migratory bird. It is found principally in the southern and midland districts of England, appearing to shun the mountainous country of the west and north. The Turtle Dove is one of the latest of our summer migrants, not arriving in its usual haunts until the end of April or early in May. Its home is in the woodlands—the quiet dense game coverts, old forests, and the rich pastoral districts where the hedges are allowed to grow high, and where there are plenty of trees scattered up and down the fields and in the lanes. It is shy and retiring in its habits, far more often heard than seen, and at the least alarm seeks shelter in the nearest trees. The Turtle Dove is particularly noisy just after its arrival, and its rich soft *coo* fills the entire woodlands with a gladsome sound. Towards the end of May the slight nest is made either in one of the forest trees or in a tall evergreen or dense hedge-row. It is composed of a few sticks, and is simply a slight platform through which the eggs may often be seen from below. These are two in number—white, slightly suffused with buff, in colour. Their small size readily distinguishes them from those of the Stock Dove, which they closely

resemble in tint. Both birds assist in hatching the eggs and in tending the young; and in many cases two broods are reared in the season. The Turtle Dove feeds on insects, fruit, tender shoots, seeds of all kinds, and grain. It drinks frequently, and often flies for a considerable distance from its usual haunts to do so and to feed. The Turtle Dove begins to leave us early in September, and by the end of that month most of the birds have gone. I saw much of this charming little Dove in Northern Africa when on its way northwards to Europe in spring. Great numbers were to be seen in all the oases, frequenting the date palms and the citron trees, and I noticed that they were far less shy here than in English woods. I also saw them in the evergreen oak forests on the slopes of the Aures, where many retire to rear their young. It was a pretty sight to watch these beautiful birds at eventide coming up from all parts of the oasis and the surrounding desert to roost in the palms. Every palm tree soon became full of Turtle Doves, and they might be seen sitting side by side in pairs; for I am of opinion this species mates for life. In the cool of early morning they left their retreats to visit the pools of water to drink. Hot and deliciously beautiful as the South Algerian winter is, the Turtle Dove retires to even warmer climes still farther to the south. The exact locality of its winter home is yet unknown to naturalists, but I am inclined to believe that it spends this season in the remotest oases of the Central Sahara and along the borders of the Southern Soudan. The Turtle Dove is easily recognised by its small size and nearly black patches on the sides of the neck.

THE CAPERCAILLIE

(*Tetrao urogallus*)

THIS magnificent bird, the largest of its order in this country, is one of the rarest and most local of those species which are classed under the head of Game. In this country it has seen many vicissitudes; most of its favourite haunts have been destroyed; the bird itself has been exterminated, and now once more it bids fair to re-establish itself in its old quarters. Four hundred years ago the Capercaillie was common enough in the pine forests of Scotland and the north of England; but since that date many of its native woods were burned to destroy the wolves which then infested Britain, and the poor bird became extinct. Fortunately for British naturalists this handsome bird has been introduced again to its old haunts, and is gradually spreading over country which is suited to its requirements. The spruce fir and larch forests are its favourite haunts, although it sometimes wanders to the birch and oak woods, and in autumn is frequently flushed from the tall heather on the hillsides. It delights to frequent the big pine woods, especially those that are studded with small lakes and tarns and swamps, and is occasionally found amongst the oak trees, for it is passionately fond of acorns. The male bird is rarely seen amongst the underwood except when moulting his plumage, but the female is often observed on the ground. These northern pine woods are full of wild romantic scenery, and some of the

glens and shady hollows are exceptionally favoured with the presence of rare birds. The Hen Harrier and the Golden Eagle may oft be seen ; the rare Crested Titmouse and the handsome little Siskin and Crossbill all find a home there congenial to their tastes. The ground under the trees is thickly covered with fallen pine "needles," and every bare space among the trees is covered with heath and other coarse vegetation. The Capercaillie is a fitting ornament to these gloomy forests. Often he may be seen perched on the topmost twig of a pine tree, his massive form coming out in bold relief against the clear western sky. He sits like this at the approach of evening, as if surveying the wide expanse of woods before retiring to his roosting-place. In summer the Capercaillie forsakes the trees for the greater part of the day, although he generally retires to the branches to digest his meal and to sleep. He generally roosts in the trees, but in winter, when the snow chances to be deep, he frequently burrows into it and sleeps secure and warm. The Capercaillie is not a migratory bird, nor does it wander far from its native woods except in the very severest weather.

The food of this fine Grouse is composed of the buds of the alder, birch, and hazel, acorns, all kinds of ground fruits, such as bilberries and cranberries, and in winter almost exclusively of the "needles" or spine-like leaves of the spruce, pine, and fir. The young are fed principally on insects, especially ants and their eggs. As may easily be supposed, the flight of this big bird is very powerful, and when he rises hurriedly from your feet or goes crashing out of the branches, where he has been intently watching your movements, although you were ignorant of his presence, his loud whirr of wing may well startle you.

The Capercaillie is polygamous, and few birds are more pugnacious in the love season, although at other times he is remarkably shy and cowardly, and often allows a Peregrine

Falcon, not a tenth part of his weight, to strike him down. The male birds begin love-making in April. The pairing-place is usually beneath a pine tree, near a pool or other opening in the forest; less frequently near a bare rock surrounded by fir trees, whose sweeping branches hang partly over it. Year after year the same place is frequented for the purpose. Just before sunrise and directly after sunset the "spel" or love-song commences, and lasts till the sun has risen above the horizon, or the twilight deepens into night. Perched on his favourite pine he puffs out his plumage, droops his wings, spreads out his broad tail like a fan, stretches out his neck, utters his love-notes, and works himself up to such a pitch of amorous excitement as to be entirely oblivious to danger. His notes are often uttered so loudly as to cause the tree on which he sits to vibrate sensibly to the touch, and may be heard for a long distance through the silent forest. Many of these pairing-places are often close together, and are frequented by all the Capercaillie in the neighbourhood. Fierce battles are fought for the possession of the females, who keep in the background and watch the strange antics of the males. The young males visit these pairing-stations, but are not allowed to call until they have fought their way into the ranks of the older and more powerful birds.

Upon the female Capercaillie devolves all the care of the eggs and young. In the month of May she scrapes a little hollow in the ground amongst the heather and the bilberry wires, near or in the forest, in which she lays from eight to twelve eggs, brownish-buff in ground colour, thickly spotted with reddish-brown and a few larger markings of the same colour. They resemble those of the Black Grouse, but are readily distinguished by their much larger size. Only one brood is reared in the year. In winter the males frequently gather into small parties, and the females and their broods often keep company through the same inclement season.

Little need be said of the sport which this fine game bird yields, or of the quality of its flesh, which is sent in great quantities to the table. Our *forte* is to watch the habits and economy of birds, and consequently we leave the various methods of capturing the Capercaillie to the sportsman and the hunter.



THE BLACK GROUSE

(*Tetrao tetrix*)

ALTHOUGH it is nowhere so common, the Black Grouse is much more widely dispersed than its congener, the Red Grouse. Its home, it is true, is on the moorlands, but low down the hillsides, where the pine woods, fir plantations, and birch coppices furnish the bird with abundant cover. It frequents the borders of the moors, where the groups and plantations of pines, alders, and birches form the boundary line between the cultivated district and the wild. It loves the sheltered hollows just below the moors, where the ground is thickly overgrown with heath and bracken, and where the briars and brambles throw their long wires over the masses of rock, and twine and twist amongst the bilberries and cranberries;

whilst here and there the patches of reeds and rushes and the alder clumps mark the marshy districts. Indeed, the Black Grouse shows a strange partiality for the swamps, and loves the rough ground and wild ravines through which the rush-fringed trout-streams dance and gurgle, and where the silver birches hang over the dark pools, and the bushes and tall rank vegetation grow in wild uncurbed luxuriance. The Black Grouse is never found far away from water, and may frequently be flushed from the dense reed tufts in the swamps.

The Black Grouse is polygamous, and the female alone undertakes the charge of the eggs and the young brood. The males live at peace with each other for the greater part of the year, but early in April a great change comes over them, and civil war may be said to reign supreme until the females have laid their eggs. Some particular spot is chosen in their haunts, where the birds of both sexes congregate ; and a visit to such a place is of never-failing interest to him who loves to study the ways and doings of birds. Repair to such a meeting-place a little before dawn, and carefully conceal yourself amongst the surrounding vegetation, when you will be able to watch the actions of the birds with ease.

It is just before daybreak. A warm glimmer lights up the eastern heavens, and the gentle morning breezes rustle through the pine branches ; surrounding objects are becoming more distinct every moment, and the few early notes of the Stormcock from the neighbouring alders, and the cry of a noisy Blackbird just hopped from its roosting-place in the hollies down in the hollow, tell you that morning is at hand. See ! the Curlews are astir, and the Lapwings are just waking up on the rough fallows. But your observations and musings are interrupted by the flapping noise of wings and the approach of a dark heavy bird. It is a Blackcock coming to the pairing-station to pay his morning courtship—to fight

for and win his brides. A handsome fellow he is, and his rich glossy plumage shines with a healthy lustre in the dim morning light—

The Blackcock waked and faintly crew,
The Blackcock deemed it day and crew.

It is indeed an interesting sight, and at no other time does the plumage of this splendid bird show to such advantage as on the pairing-ground, when the first rays of the morning sun cause its pristine beauties to show out in all their rich intensity. He looks round a moment as if half conscious of your presence, and then busies himself with his own affairs. Drawing himself up to his full height he struts proudly about, now trailing his wings, and ever and anon erecting and spreading his broad lyre-shaped tail, all the time incessantly uttering his peculiar love song—

In the clouds red tints are glowing,
On the hill the Blackcock's crowing.

Now he springs into the air, turning halfway round as he descends, then crouches to the ground, swells out his throat, and in a dozen different ways strives to display his charms, or give challenge to a rival. But your attention is soon called away from him, for shortly another cock bird makes his appearance. Another and another speedily arrive, and all are soon engaged in the same strange antics; and see, there are several females now, much less conspicuous in their brown plumage. Now two males meet in this strange arena and a combat takes place, the birds fighting with as much zest as a couple of bantam cocks, and in much the same way, the feathers falling thickly as the battle increases in fierceness. The females are getting more interested every moment, ready to bestow their favours on the victorious males, and run to and fro with drooping wings, occasionally uttering a low

call-note. And so these combats proceed until all the females are won, when the strife ceases and the birds retire to seek their morning meal, but again assemble in the evening, and not unfrequently in the middle of the day as well. Throughout the laying season the Blackcock is a noisy and pugnacious creature, and once the full complement of eggs is deposited by the female, he quits her society, probably for ever. He now becomes a peaceable bird; his pugnacious disposition has vanished, and he seeks the company of his own sex to feed and flock with them for the remainder of the year.

Now let us follow the female birds and devote our attention to them. You rarely indeed find the Gray Hen's eggs till early May. The nesting-site is a varied one, but as a rule well and artfully concealed. It may be where a pine tree has been snapped by the wintery blasts or broken by the snow wreath, and its branches are almost buried by the bracken and brambles; or it may be under a dense mass of briars, or not unfrequently beneath a thick bush of heather or a tuft of fern. But very little nest is made—a hole is scratched out and lined with a few bits of herbage: fern fronds, bits of heath, or bracken leaves. In this rudely formed nest the Gray Hen deposits from six to ten eggs. They are brownish-buff in ground colour, spotted and blotched with rich brown of various shades, and are like those of the Capercaillie, only smaller. But one brood is reared in the year, and the parent and her offspring usually keep together throughout the winter. In some cases the nests contain as many as sixteen eggs; but these are the produce of two hens—a fact which is proved by seeing one large brood of young birds being tended by two females. This often takes place where the birds are at all numerous.

Throughout all the list of our British birds I do not think we can find a more striking instance of the utility of colour in the plumage of birds than is to be seen in the Gray Hen's

sombre dress. She differs greatly from the male in colour, being mottled brown of various shades. These brown tints are of great service in shielding her from enemies when sitting on her eggs, by harmonising with the surrounding colours of the heath and fern. Well does she know in which direction safety lies, and, as is usual with all protectively coloured birds, and even animals and insects, for the law is universal, she remains quiet and motionless, brooding over her treasures until almost trodden underfoot. The eggs, too, are of protective tints, and consequently are never covered when the sitting-bird leaves them—a fact, by the way, contrary to the expressed opinion of many writers on ornithology, who evidently have had no experience with the Gray Hen's domestic arrangements. The Black Grouse sometimes interbreeds with other game birds, but the offspring, as is usual in such cases, appear never to be fertile.

The Blackcock is an extremely wary bird, skulking low amongst the vegetation of his haunts, only rising when absolutely compelled to do so. His flight is swift—more so than that of the Red Grouse, but somewhat laboured, and upon rising he usually utters his harsh alarm-note. When disturbed the Black Grouse generally flies for a considerable distance and often at a great height. I have known it fly for half a mile or more at a time across a valley or along the hillsides. Another peculiarity in this species is its partiality for perching in trees. The Red Grouse only perches in trees very rarely, although it is extremely fond of resting on walls and rocks; but the Black Grouse may be seen in the trees continually, and generally roosts in the branches of the pine and fir, or even amongst the prickly foliage of the holly. This love for the gloomy foliage of the evergreen is doubtless prompted by protective motives; for the brilliant blue-black dress of the male is very inconspicuous in such a resting-place.

The food of the Black Grouse is almost entirely composed of vegetable substances, varied according to the season of the year. Thus in summer the bird feeds upon seeds and the tender shoots of heather and leaves, and also insects of various kinds, especially ants and their eggs, on which the young are largely reared. The various wild fruits and berries of the moor and mountain side are consumed in autumn, at which season it is also seen on the stubbles near its haunts picking up the scattered grain. In the winter months, when the bleak mountain sides seem unable to support a bird of any kind, the Black Grouse lives sumptuously on the willow twigs, birch catkins, leaves and shoots of turnips, various buds, especially those of the alder, and the never-failing leaves of the heather.

Black Grouse moult in July and August, and at that time skulk about a good deal amongst the herbage. The males seldom visit the trees till they obtain their new feathers, and the females keep well out of sight. Young of this species, as every game preserver knows, are extremely difficult to rear, wet seasons being especially fatal to them; and many nests are washed away through being made too near the rapidly rising mountain torrents. The sportsman will also find that on the dull misty autumn days this species often sits in the low trees and lets him approach within gunshot; and as the Red Grouse always endeavours to fly down wind, he will just as surely find the Black Grouse try to fly up wind. If much shot at, the birds generally mount up high in air and fly away to some distant cover. He will also notice that the birds rarely fly uphill, but when flushed on the mountain sides hurry off to a lower level.

THE PTARMIGAN

(*Tetrao mutus*)

Along yon moorland brown with heather bells,
There swarms the honey-bee and sings the lark ;
While Grouse which summer saw burst from their shells,
Rough-footed run o'er knowes where moss-bees build their cells.

THE Ptarmigan is another of our rarer birds, and one that is extremely local in its distribution, being confined to the wild northern uplands. Yon distant mountain tops, where here and there the snow still lies in the sheltered hollows, even in June, do not look likely to repay the ornithologist for his exertions in reaching them. But these lofty hills capped with cloud, all glowing in sunlight or frowning in shadow, are the home of the Golden Eagle, the Peregrine Falcon, the Merlin, the Dotterel, and the Ptarmigan. We must leave the lowlands far behind us, cross the sloping moors, where the Red Grouse lives amongst the heath, and climb up the hills to their highest summits before we can expect to meet with the Ptarmigan. The scene up here is wild and barren and desolate in the extreme. The silence of the mountain tops is most impressive. The flat ground is thickly strewn with loose stones and large boulders, but in all the sheltered nooks the bilberry and other ground fruits abound, and in many places patches of scrubby heather find a precarious root. Behind the big rocks, and in the hollows where no sunlight penetrates, snow of dazzling whiteness covers the ground, pure

and unstained as when it fell from the clouds six months ago. These mountain solitudes are rarely visited by man; still the birds we have come to seek are wary enough, and strive by arts of deepest wile to escape our notice. You see those round grayish objects dotted here and there over yonder bit of level ground? Stones, surely; they never move; they are part of the ground itself. But no; they are birds—Ptarmigan in their summer plumage, shamming death, imitating bits of gray lichen-covered rocks, in the hopes that their deceptive actions will effectually prevent their detection. We may thus often wander amongst a number of these mountain Grouse without observing them, until we almost stumble over a crouching bird, when one by one they rise all round us and hurriedly fly away.

The Ptarmigan is one of the best instances I know of protective coloration. In spring and summer it dons a dress of mottled gray and brown, which absolutely shields the bird from its enemies, as we have already seen; and, still more interesting, as soon as these wild mountain tops begin to get covered with the wintry snows, the Ptarmigan loses its summer livery and assumes a snow-white plumage, which renders it invisible among the eternal whiteness of its dreary haunt. It has many enemies, ever on the alert—big Eagles and active Falcons that hunt the mountain tops; and were it the least bit conspicuous it would soon become exterminated. A bird whose greatest safety is on the ground does not fly much, and consequently the Ptarmigan only uses its wings to escape from an enemy when every other artifice has failed, or when it flies across the deep valleys from one mountain top to another.

When all is quiet the Ptarmigan may sometimes be seen sitting on the bare rocks, but it is generally met with on the ground, where it runs about in a very similar manner to the Red Grouse. Many of its habits are also like those of that

well-known bird. Its flight is rapid, and performed by quick beatings of the wings. Sometimes the wings are held arched and stiff, and the bird skims with great rapidity along the mountain sides, or over a ridge or heap of rocks. Its note, however, is very different. It is not nearly so loud and startling, being much more hoarse and guttural; and for the greater part of the year the bird is a singularly silent species. I have heard Ptarmigan make a low grunting kind of sound when a flock of these birds have been crouching low amongst the stones. The food of this Grouse is almost entirely vegetable in its character. In summer the bird may catch a few insects, but at all seasons it seems to prefer buds and tender shoots of the mountain vegetation. In autumn seeds are eaten, and also vast quantities of the small ground fruits which grow so abundantly in its mountain home. I have known it wander lower down the hillsides at this season in search of fruit; and in winter it often descends to lower ground, provided it is covered with snow, when the mountain tops are too deeply buried for it to reach its accustomed food. The Ptarmigan swallows a considerable quantity of pebbles and grit to aid it in the digestion of its food.

Ptarmigan, like Grouse, pair rather early in the season, but do not begin nesting duties until winter is finally banished from the mountain tops. If the season is a forward one, the eggs are usually laid early in May; but if the winter has been unusually long and severe, the end of that month is reached before the nest is made. This is a simple affair—merely a hollow in the scanty soil on the mountain top, lined with a few bits of dead heath or bilberry wire, or a little dry grass. The nest is rarely placed beneath the shelter of a bush, but it is sometimes protected on one side by a big stone or a piece of rock. The eggs are from eight to twelve in number, and considerably different in general appearance from those of the Red Grouse. They are buffish-white in ground colour, spotted

and blotched with rich liver-brown, and are not so profusely marked as the eggs of that bird. They are eminently protective in colour, and are very difficult to see as they lie amongst the little stones and uneven ground. The female, too, in her protective dress, sits closely over them; but she never covers them when she runs off for a little time to feed. Shortly after the young are hatched they run about with their parents; but if a Hawk or an Eagle should appear the whole brood scatter with great speed and hide themselves amongst the stones and plants, where they keep perfectly motionless until the danger has passed. I should here mention that the Ptarmigan is a monogamous species like the Red Grouse, and it appears to pair every season.

As soon as the young can fly, the Ptarmigan gather into flocks which roam about the highest mountain tops in quest of autumn fruits. A word as to the change of plumage in the Ptarmigan. This bird for three parts of the year is in the moult. Except in winter it appears to be incessantly changing its feathers to adapt itself to the varying colours of its haunts. In spring its dress is dark brown, mottled with yellowish-brown; and in autumn it changes to pale gray, sprinkled with black. The summer plumage is somewhat intermediate between these two extremes. The quill feathers, however, are only changed once, in autumn. It is very probable that many of the feathers simply change colour gradually from the root to the tip, and are not moulted.

THE RED-LEGGED PARTRIDGE

(*Perdix rufa*)

THE Red-legged Partridge is not indigenous to this country, but was introduced here, like the Pheasant, so long ago that we have quite got to look upon it as a bird of the southern fields. There is much in the habits of this handsome bird that is interesting to the naturalist—habits acquired amongst very different surroundings, and which it still retains in its new home. Unlike the Pheasant, its immigration has not been attended with very great success. Fortune has not been kind to it, and it only lives in a few localities well adapted to its needs. It must have a warm sandy soil if it is to thrive ; it dislikes clay and heavy ground ; and wet seasons are singularly unfavourable to its increase. The Red-legged Partridge belongs to a little group of Partridges, all very much alike in their habits and the colour of their plumage, which frequent dry and mountainous country. I have often studied the habits of its cousin, the Barbary Partridge, in the wild upland districts of Northern Africa—and they are all thorough birds of the wild. It is perhaps fortunate that the Red-legged Partridge does not thrive very well in this country, because in all the localities in which it has established itself the Common Partridge has sensibly decreased in numbers, and in some places has been completely exterminated by the larger and much more pugnacious species. Game preservers have not been slow to recognise this peculiar habit of the Red-

legged Partridge, and on many estates it is persecuted quite as relentlessly as the Crows, Hawks, and other vermin. This is another reason why it is not more widely dispersed.

Like most other birds of showy plumage, the Red-legged Partridge is a skulking, shy, and wary creature, only using its wings to escape from enemies when all other means have failed. It always prefers to run from danger, threading its way through the dense herbage and up the hedge bottoms with great speed. When driven into the air it very often perches in a tree or on the top of a tall hedge, much to the surprise of an observer little acquainted with its habits; and in some districts where the bird is rather common I have watched them perch three or four together on low walls, or even on the wire fencing which has been fixed up on poles to prevent sheep from jumping the low hedges into the country roads. Even its long residence in this country has not entirely obliterated the Red-legged Partridge's love for wild uncultivated ground. In autumn it frequently wanders from the fields, and haunts the little plantations and rough ground near the woods, all overgrown with rush and briar and bramble and thick coarse grass. It loves the densest cover, and should always be sought where the vegetation grows most luxuriantly. It is a bird evidently not used to snow, and when the fields are covered this Partridge quits them and skulks amongst the tangled hedges and the brushwood. In summer this bird lives largely on insects, but during the remainder of the year, seeds, buds, shoots of clover, and grain are its favourite fare. It loves the stubbles that have been cut by the sickle best, discarding those which the modern reaping machine shaves almost as bare as the ground. True, it feeds on them, but at the least alarm you may see the big plump birds running stealthily and quickly to the friendly cover of the hedges. They often perch on the corn-stooks, and repeatedly hide themselves by running under them. The note of the Red-

legged Partridge, heard most frequently in spring, more resembles the well-known whistle of the Quail, but is as loud as that of the Common Partridge.

It is in the pairing season, early in April, that the Red-legged Partridge is most pugnacious. Then combats are of frequent occurrence between rival males, and it is now that the birds display singular fierceness against the Common Partridge. The nesting season of the Red-legged Partridge is much earlier than that of the common species, the eggs being laid by the end of April or beginning of May. The nest is a slight structure, made amongst the growing clover and corn, or in the thick vegetation at the bottom of a hedge. It is merely a hollow scraped in the ground, and carelessly lined with a few dead leaves and bits of withered herbage. The eggs, generally twelve in number, but often only ten, and sometimes as many as sixteen, are pale brownish-yellow spotted and speckled with dark brown. Singularly enough the Red-legged Partridge lays her eggs at irregular intervals. Most birds lay an egg each day until the full complement is deposited, but the present species sometimes goes for several days without laying. The nest is occasionally made some distance from the ground in the roof of a corn- or bean-stack—the Pheasant and the Partridge repeatedly do the same. The female sits closely, depending for her safety on the brown colour of her upper plumage and the wealth of vegetation which almost covers the nest. Only one brood is hatched in the year, and both parents assist in rearing them, for be it known that the Red-legged Partridge is monogamous.

In autumn the broods still keep together, and often unite into large coveys for the winter months. They now visit the stubbles to pick up the scattered grain, or wander from the fields to the more open country, especially to commons which are dry and covered with thick scrub and gorse. They always appear to roost on the ground, but frequently enter plantations

and the borders of woods for that purpose, especially in severe weather. The flesh of this Partridge is not nearly so well flavoured as that of the Common Partridge ; and the sport it yields is very inferior. It is too restless a bird—too fond of running ; and the coveys break up when alarmed, and often disturb the Common Partridge, which otherwise would have laid close to the dogs.

The Quail (*Coturnix communis*), though widely distributed over the British Islands, is nowhere common, and therefore demands a place among our rarer species. Unlike all our other Game Birds, the Quail is a migrant, visiting this country in spring and retiring southwards to Africa in autumn. The Quail comes with the very last batch of migrants, arriving here early in May, and leaves us again in September. The migrations of the Quail are extremely interesting. This little bird migrates chiefly by night, although I have met with it crossing the Mediterranean during the day. Vast numbers collect and journey in company, especially in autumn, and many thousands are netted every year for food. The Quail in this country is a skulking bird, and loves to frequent the fields of growing corn and other herbage, rarely flying far, and only betraying its whereabouts by its shrill whistling-note. In the choice of its food and in many of its habits it does not differ much from the Common Partridge. It flies quickly, runs fast and skilfully through the herbage, lies close to the ground at the approach of danger, is fond of dusting its plumage, never perches in trees, and is most partial to dry and sandy soils. In many cases the male pairs with one female alone, but in others it is polygamous, each male consorting with several females. It breeds late, the female making her scanty nest amongst the corn, clover, or other herbage in June. This nest is merely a hollow lined with a few bits of dry grass and dead leaves. The eggs vary greatly in number—from eight to twenty ; but probably the largest

clutches are the produce of several females. Two or three nests are frequently made close together in the same field. The eggs are remarkably handsome ones, yellowish-olive in ground colour, boldly spotted, blotched, and freckled with dark brown and olive-brown. The males throughout the laying period are very pugnacious, and combats are constantly taking place between rival birds. The young, like Partridges, run as soon as they are hatched, and the female takes the entire charge of the brood. Quails do not join into coveys in autumn, but seem to live a singularly lonely life until migration time. The Quail's resemblance to the Partridge in colour and form is very noteworthy, but the bird may instantly be recognised by its small size.

THE HERON

(*Ardea cinerea*)

INCESSANT persecution has well-nigh exterminated every large bird from the inland woods and fields, but one still survives—thanks probably to his incessant wariness and the nature of the haunts he frequents. This is the Heron; the big gray watcher by the water-side that we sometimes disturb from his piscatorial musings in the quiet corners of the rivers and ponds. He is the solemn sentinel of the waters, and the moment he rises into the air is the signal for all the other birds in the vicinity to be on their guard. The Heron loves to frequent slow running rivers, the shores of lakes, large fish-ponds, and extensive marshes which are occasionally broken by shallow rush-grown pools. He is also often seen on the seashore and near the mouths of tidal rivers, where he walks sedately about the mud and fishes in the shallow waters.

Although every bit as regular in his habits as the Rook, the Heron cannot be described as a gregarious bird. True, he lives in colonies during the breeding season, but away from the nests we seldom see more than three or four together, and each seems to busy himself with his own affairs alone. Like a true angler he usually prefers to fish by himself, and always seems thoroughly engrossed in his occupation. The Heron is a wanderer, and goes long distances to fish, returning at dusk to his roosting-place. He is generally to be seen standing a little distance from shore knee-deep in the water,

with neck bent and head almost between his shoulders, patiently waiting and watching for his food, almost as motionless as though he were carved out of marble. But he is alert and active enough, and woe betide the unlucky fish or frog that ventures within reach of that spear-like bill, or under the gaze of that piercing yellow eye. Sometimes he may be seen standing quietly on the mud on one leg, the other drawn up close to his body and hidden under the long feathers; but if asleep he slumbers with one eye open, and the least sign of danger causes him to unfold his big black wings and hurriedly fly away. Generally the Heron looks remarkably graceful, but when the long neck is held up to its full extent the bird has an ungainly not to say ugly appearance. Although most frequently seen on the ground, the Heron is an accomplished percher, and may often be observed sitting on a slender branch which bends nearly double under its ponderous burden, or on the topmost spike of a larch or fir tree. Here he may seem out of his element, but he is thoroughly at home. The broad wings of the Heron make his flight appear somewhat laboured, but he is capable of passing through the air at great speed, and often flies for very long distances at a time, frequently going as many as thirty miles to and from a favourite fishing-place. The flight is performed by slow and regular beats of the ample wings, the long slender legs are held out behind, probably acting as a rudder, and the head and neck are drawn close in between the shoulders. When he is flying the wings have a singular arched appearance, which renders the identification of this species an easy matter.

It is a pleasing sight to watch the Herons fly home at eventide. They fly high, well out of danger of any ambuscade, taught by bitter experience to give all suspicious objects a wide berth. As the dusk creeps over woodland and field and swamp, and the pale yellow light of the dying day illuminates

the landscape with a lurid glare, the big birds fly lazily up from all points of the compass, gorged with food, to their roosting-place amongst the tall trees. In winter they generally sleep in fir woods, but in summer deciduous trees are just as often selected—usually those in which they have built their nests. The woods where the Herons roost are a stirring animated scene at nightfall. As you stand beneath the lofty trees, hidden amongst the tall underwood, the birds are seen flying silently across the clear western sky, and the crashing of the branches in all directions tells you that the Herons are settling down for the night. Their big forms may be seen amongst the branches overhead, and the slightest movement on your part will send them scurrying out again into the evening gloom. Sometimes two birds quarrel and come fluttering down the trees almost to the ground ere they separate and fly away. The Heron is early astir in the morning, and is off to seek his breakfast before the sun is well above the eastern horizon. Sometimes when a bird has been fishing a long way from home and is overtaken by night, he sleeps on the water-side. When the moon is at the full, and the nights are almost as light as day, the Heron stays out to fish; and I have often watched them standing motionless in the water, fishing as patiently and diligently as in the daytime.

Few birds are so silent as the Heron. When hurriedly flushed or surprised in some quiet corner of the waters, it often utters a hoarse croaking sound; but its usual note, given forth as it flies through the air, is a loud trumpet kind of scream, short and deep in tone. When angry or alarmed I have known it make a loud snapping noise with its beak. Its voice sounds particularly weird and mysterious from a midnight sky, or in the gloom of evening, as the birds fly high in air to the distant roosting-place. The food of the Heron is largely composed of fish, those from salt as well as fresh

water being eaten indiscriminately. Frogs, small lizards, water insects, and even small animals, such as shrews and mice, are also eaten. I have known this bird prey upon young Coots and Moorhens; and on one occasion I took the skeleton of a Redshank from its nest. Upon the beach it frequently catches small crabs and quantities of shrimps. The Heron is a voracious feeder, digesting its food very rapidly; hence the reason for its fishing so industriously on every possible opportunity. Its partiality for fish makes it an object of persecution by all keepers and owners of ponds and rivers where fish are preserved; but it is a pity that such a handsome bird should be sacrificed at every opportunity for such a cause.

The Heron, like the Rook, is probably united to its partner for life, and every year the same nest is occupied. It is an early breeder, generally laying its eggs in April, and in some cases as early as the latter end of March. Herons, like Rooks, breed in societies, and visit their nests more or less frequently throughout the year. They will establish their colonies in almost every description of forest tree, generally in thick woods and plantations. Fir woods are frequently chosen for the purpose, and it matters very little whether the heronry be near to water or not. Sometimes their nests are made in the centre of a large wood far from water; but at other times they will establish their colony on the wooded banks of a lake or river, or even on cliffs both inland and near the sea. A good look-out is always chosen if the district admits of a selection in this respect. Let us pay a visit to the heronry on yonder hillside. As we cross the marshy country on our way thither, every now and then startled Herons rise up from the pastures or from quiet corners of the little trout-stream that dances down the hills. The Herons have chosen a small wood of larch trees for their colony, and long before we have reached the place the ever-watchful birds take alarm,

and numbers of them are soaring high in air above the nest trees. The larches are just clothed in their delicate emerald robe of spring, and are now more beautiful than at any other time of the year. The big gray Herons may be seen here and there standing on the highest trees, their plumage contrasting strongly with the vernal green of the foliage. Every moment birds are flying up from distant fishing grounds, others are as constantly leaving the busy colony, which the nearer we get becomes more and more animated. We are under some of the outlying nests now, and on every side we hear fluttering amongst the trees when the big broad wings of the Herons strike against the branches as the birds hurry away. The Heron is tamer now than at any other time of the year—love for its eggs and offspring making it relax its usual wariness. High in air above our heads the graceful Herons are flying to and fro, not in noisy converse, as Rooks would be, but philosophically silent. Every now and then we are startled by a Heron gliding silently within a few yards of where we are standing, his beautiful plumes and gorget and yellow eye contrasting richly with the rest of the plumage; and we experience quite a novel sensation at seeing so wary a bird at such close quarters. Every moment birds are hurriedly flying from their nests, and the swish, swish of their ample wings is heard as they soar upwards to join their companions high in air above the trees. At such a time we have a good opportunity of witnessing the great power of flight and the wonderful command over itself in the air which the Heron possesses.

But let us leave the birds for a little time and confine our attention to their nests. These are placed at different heights up the trees, generally at some distance from the trunk on a broad level branch, although sometimes one is built on the flat top of a tree or in a wide fork close to the stem. As in a rookery, some of the nests are much larger than the others,

and these are the ones which have been added to each year. Before the young are hatched the nests are broad and shallow, with a small cavity in the centre, in which the eggs are laid ; but very soon after the young Herons arrive upon the scene the nests are trodden out of all shape, and more resemble huge masses of sticks than the homes of birds. They are almost entirely made of sticks, the large ones forming the outer framework, and the finer twigs being used as a lining, which in some cases is further increased by masses of turf and moss. The nests soon get regularly whitewashed with the droppings of the birds, and the ground below the trees, especially late on in the season, when the young birds are nearly able to fly, is white from the same cause, whilst the smell from decaying fish and dead nestlings is often very offensive. Under the trees are to be seen quantities of broken egg-shells and sticks, which have either been dropped by the birds or been blown from the nests by the spring gales.

The eggs of the Heron are from three to five in number, a beautiful greenish-blue in colour, but without any gloss. Long before the ungainly-looking nestlings are able to fly, they clamber out of the nest and explore the neighbouring branches, often visiting the adjoining trees, where they are fed by their parents. I have often seen young Herons climbing about the trees using their beak as well as their feet to assist them ; and when I have been up the trees examining the nests I have noticed how quickly the nestlings hurry out of the way on to the slender branches where pursuit is impossible. The Heron only rears one brood in the season. The young are voracious feeders, and when the heronry is some distance from the water the old birds' energies are taxed to the utmost. Early and late, with as much regularity as Rooks, they may be seen flying backwards and forwards feeding their ever-hungry young.

As soon as the young can fly, the old birds appear to desert them, and their half-solitary life is resumed. The young birds are just as retiring in their habits, fishing along the streams and rivers by themselves, but they are not nearly so wary as their more experienced parents. During severe weather the poor Heron is often hard pressed for food, and it soon becomes very emaciated if the waters continue frost-bound long. It then seeks the coast in unusual numbers, making for the mudflats and shallow seas, where food in abundance can always be obtained. When so far from home it often passes the night upon the shore, or joins the members of another heronry and shares their roosting-place. It is very rarely that the Heron swims, but it often stands in water up to its thighs, where it has the appearance of floating on the surface. The Heron, like most other birds, soon gets used to the deafening noise of railway trains or the splash of steam-boats, seeming to know that they bode him no danger. As the traveller speeds along the estuary of the Exe, for instance, between Exminster and Dawlish, he may often see the Heron feeding on the wide expanse of mud not a stone's throw from the carriage window ; and as he steams up the beautiful winding Dart between the wooded hills, the big gray Herons show little concern at the boat's intrusion and fly lazily along the shore, their plumage contrasting strongly with the luxuriant verdure on the banks, or start up from the quiet bends of the stream, where they go to fish in the shallows.



THE WATER-RAIL

(*Rallus aquaticus*)

YOU will sometimes meet with a skulking little bird amongst the secluded marshes whose actions put you much in mind of a Corn-Crake or a Moorhen—this is the Water-Rail. He may justly rank as one of our rarer birds, though apt to be thought much scarcer than he really is, owing to his shy and retiring habits. There are few marshy tracts where the cover is sufficiently dense, and the waters well fringed with reeds and rushes, that do not harbour the Water-Rail during the summer months. In winter he is much more locally distributed, and numbers retire southwards at this season from the more northern swamps, returning when the aquatic vegetation shoots up again and furnishes him with

the needful cover. We have not a more skulking bird in our country, and he is one that is very rarely seen in the open. Seldom does he venture far from the friendly cover, until the evening's dusk is falling and the big white fog banks roll heavily over the fens — then you may sometimes catch a glimpse of him as he timidly creeps out of the rushes into the open spaces to feed. The least alarm, however, sends him scurrying off into the reeds, or you hear his splash as he drops suddenly into the stagnant water and hides in the vegetation near the bank.

The haunts of the Water-Rail are a favourite resort of many kinds of birds. The rare Marsh Harrier may sometimes be seen beating over the vast expanse of swamp and broad and reed-bed, in search of eggs and birds. Where the reeds grow tallest, you may perchance catch a hurried view of the beautiful Bearded Titmouse; Reed Warblers fill the swamps with melody; Cuckoos call from the pollard willows; Moorhens and Coots and Grebes are everywhere; and now and then a Gull or a Black Tern may be seen; and the Corn-Crake's rasping call is heard from the tall grass and swampy meadows. Big gray Herons fish in the quiet corners of the broads; Wild Ducks and Teals hold their revels in the deeper pools; high in air the Snipe is drumming, mingled with the Swifts and Swallows; and on the higher ground we may still flush the Short-eared Owl from her nest. If the curious Spoonbill has vanished, and the Bittern and the Avocet are seen no longer, there is still much of all-absorbing interest here to tempt the lover of nature to these wide expanses of marsh and reed-fringed waters. At dusk the Water-Rail comes forth; and in the twilight you may see him, solitary as is his wont, swimming across the open water from one bed of reeds to another, or gliding like a dark shadow amongst the coarse grass and rushes. You may often hear him utter his peculiar grating note as he flies round and round above his watery

haunts, invisible in the gloom, just as the Moorhen is wont to do; and rarely you may flush him from the willow thickets, especially in spring or autumn, when he is rather unsettled, or in winter, when the weather is severe and most of the pools are frozen. His food consists of insects, especially those of the coleopterous order, worms, and various small mollusks. In winter, when hard pressed, he will eat the leaves and buds and seeds of various aquatic plants, and I have known him make a meal on the white snails which often cover the grass in the autumn months.

Water-Rails are most unsociable birds. Rarely do we meet with more than a pair in one part of the broad, and, except in the breeding season, we more often meet with a single solitary bird swimming about seemingly more intent on concealing itself than any other pursuit. The Water-Rail may pair for life, although of this I have not much confirmatory evidence. It breeds in April and May, making its nest amongst the clumps of rushes, or in the dense vegetation on the margin of the water. This nest is most difficult to find, and usually owes its discovery more to accident than design. Systematic searching through its haunts may, and often does, lead to nothing but failure, but we sometimes stumble across it when we least expect to do so, and in a place we should scarcely think likely enough to examine. It is made of the stems and leaves of the reeds and rushes, perhaps a few bits of coarse grass, or even a dead leaf or two. The eggs are six or seven in number, and very much like those of the Land-Rail; but the spots are smaller, and often more clearly defined. The sitting-bird is rarely flushed from the eggs—she leaves them long before her home is approached; but if suddenly surprised she slips off and glides through the surrounding herbage with great speed, rarely uttering a sound, and skulks close by until the danger has passed. I do not think she ever covers her conspicuous eggs when leaving

them ; the nest is generally too well concealed amongst the herbage for them to need such further protection when the sitting-bird is absent. The young chicks, pretty little creatures almost as black as jet, take to the water soon after they are hatched. It is a very charming sight to see a brood of these young Water-Rails swimming about the quiet pool, in and out amongst the reed stems, or running over the broad flat leaves of the candocks and water-lilies. The voracious pike often makes a meal of the entire brood, and they have many perils to undergo ere they reach maturity.

The Spotted Crake (*Crex porzana*) is much more locally distributed than the Water-Rail and is far less common. Nevertheless, as it breeds in this country it claims a place in the ranks of our rarer birds. It is readily distinguished by its white-spotted upper plumage. In all its habits, the haunts it frequents, the food on which it lives, its note, its flight, and the materials and situation of the nest, the Spotted Crake resembles its ally the Water-Rail. Its eggs, however, are very different, and present characteristics which readily separate them from those of all other British species. The spots upon them are large, dark, and very distinctly defined, and the inside of the shell when held up to the light presents a strong greenish tinge. Many Spotted Crakes leave this country in autumn, or simply cross our islands at the two seasons of migration ; but a few, probably the birds that breed with us, remain in their old haunts throughout the winter.

Baillon's Crake (*Crex bailloni*) is a rarer and more local species still, but it may be much overlooked owing to its skulking habits. It closely resembles the Spotted Crake in appearance, but is, of course, easily distinguished by its small size. Its habits are very similar to those of the preceding species ; it loves to frequent the little pools of still water which are densely fringed with rushes, flags, and aquatic vegetation of all kinds. Small as it is, it swims lightly and

buoyantly, dives readily, and flies quickly but in a rather laboured manner. It dislikes the open, only takes wing when compelled, and always prefers to hide amongst the herbage when danger threatens. Its food is composed of insects, worms, and the various small mollusks that frequent the water. Its nest, cunningly hidden amongst the reeds, is made of dry rushes and scraps of withered aquatic herbage. From five to eight eggs are laid, in shape something like those of the Little Grebe, buff of various shades in ground colour, clouded and mottled with olive-brown and gray. The eggs of the Little Crane cannot be distinguished with certainty from those of this bird, but the former species has never been known to breed in this country. Baillon's Crane is a resident in the fens and broads of Cambridgeshire and Norfolk.

THE STONE-CURLEW

(*Edicnemus crepitans*)

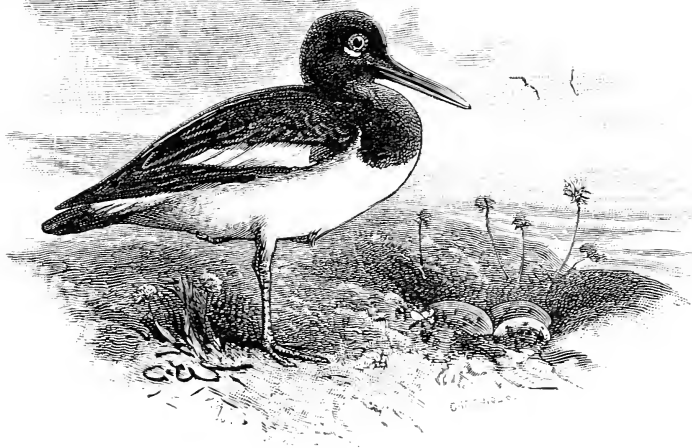
STILL keeping to the low-lying counties, but repairing to the heaths and commons on the wolds, we may have the good fortune to meet with the singular and interesting Stone-Curlew, Norfolk Plover, or Thicknee, as it is severally known. It is not related very closely to the Curlew, being in fact intermediate between the Bustards and the Plovers, probably most closely related to the latter group of birds. It is a summer migrant to this country, and in spite of the drainage, which has greatly curtailed its haunts, still continues to be fairly well distributed in suitable districts. It returns year after year to its favourite haunts, arriving here in April and leaving in October. Wide extensive heaths and rough open country, which is often turned into rabbit warrens, are the places the Stone-Curlew loves. He is a bird of the dry sandy soils, and rarely if ever wanders to the lower and more marshy ground. Nor does he frequent the wooded country, although his favourite heath may be surrounded with trees and fields with tall hedges. The ground cannot be too rough or broken for the Stone-Curlew—heath and furze and briars, coarse grass and stunted bushes, intermixed with bare pebbly ground; these are the characteristics of its summer haunt. It is a wary bird, and usually takes wing the moment an intruder steps upon the heath. Sometimes you may see it standing amongst the herbage, looking warily around with its

head held high; and if you approach it runs rapidly for a little way, then rises into the air. The Stone-Curlew becomes most active at dusk, and during the warm summer nights its loud and plaintive note may be incessantly heard high up in the air, as the bird flies to and fro above the heath. Its large prominent eye informs us that it is a night feeder, and in this respect it shows a closer affinity with the Plovers than with the Bustards. In the gloom it searches for the worms and snails and beetles on which it feeds; but it also catches frogs, and even lizards and field mice.

By the end of April, or very early in May, the Stone-Curlew has commenced breeding. I have taken its eggs in Lincolnshire during the first week in May. The nest is most difficult to find, as the old birds do little to betray its whereabouts. At the first sign of your appearance on the heath which contains their nest the ever-watchful female quits her eggs, the warning note being given by the sentinel male, and running along some distance from her home she usually takes wing, and both the birds fly away to a distant part of their haunt. You must always search the barest ground for the eggs of the Stone-Curlew—places where the heather has been burned in previous years, leaving the ground rough and stony, or where the peat has been dug for fuel by the peasantry. The nest is but a shallow hollow in the ground, without lining of any kind, and the eggs are two in number, buff in ground colour, spotted and blotched and streaked with brown of various shades and light gray. Some eggs are covered with streaky markings instead of spots. They resemble those of the Oystercatcher, but may readily be distinguished by their smaller size. They are eminently protective in colour, and require the sharpest eyes to detect them from surrounding objects. In the number of the eggs the naturalist will notice a close affinity to the Bustards—all true Plovers lay four. The young run soon after they are hatched, and when

approached they scatter and conceal themselves amongst the herbage and stones; and sometimes the mother bird crouches close to the ground and remains motionless, just as the female Pheasant will often do under similar circumstances.

As soon as the young birds can fly, the Stone-Curlew becomes more gregarious. The broods and their parents often unite with other families that have been bred on the same stretch of heath, and feed and fly together in a small flock until the time of departure arrives. In the dusk of the autumn evenings, or in the hours of early morning, the Stone-Curlews are particularly active; and I have seen them amongst the turnips at this season searching for worms and snails under the broad dew-laden leaves. How beautiful these autumn mornings are! What a bright fresh charm the fields and heaths possess in these early hours before the bustling busy world is well awake! This is the chosen hour for animated nature, and birds are exceptionally active and full of excitement. What pen can do justice to the glorious tints of the autumn woods, or the bewitching colours on the hedgerows and the heaths as they glow and glisten in the rising sun? The air is deliciously sharp and fresh, and laden with the dying year's sweet fragrance. How mellow is the voice of the Stormcock! how plaintively beautiful the Robin's autumnal song! Most birds display more activity now than they will indulge in until evening, and the Stone-Curlews are no exception to the rule. They may be watched feeding on the marshy portions of the heaths, or running up and down amongst the short ling in quest of sustenance. Though excessively wary and shy, it is easy to conceal yourself amongst the thick vegetation, and watch their movements either as they run about the ground or fly from place to place high up in the air. The Stone-Curlew migrates at night, and leaves us in autumn as suddenly and as stealthily as it came in spring. A figure of this curious bird is given in the illustration with the Water-Rail.



THE OYSTERCATCHER

(*Hæmatopus ostralegus*)

THIS singular bird may best be described as the Magpie of the shore, its black and white plumage, brilliant orange bill, and pink legs, making it a very conspicuous object along the precipitous coast. It is only occasionally that we meet with the Oystercatcher on the mudflats and marshy shores, and then in autumn and winter. It loves the long reaches of rock-bound coast, which are occasionally varied by stretches of sand and shingle, with quiet bays and creeks and lochs which expose a considerable portion of rough beach at low water. You may also often meet with this bird on low rocky islands, even where there is little beach. The Oystercatcher is the very life and animation of the coast. Wary and shy, it is seldom you can approach him very closely. He rises into

the air, uttering his loud *heep-heep-heep* as he goes, and dashes impetuously off across the bay or round the distant point the moment you approach too near his haunt.

If you wish to observe the Oystercatcher's actions on the shore you must stalk him, every bit as carefully as you would a timid deer, or conceal yourself behind the rocks, or amongst the big wet seaweed-covered boulders, in the rear of the sand and shingle. What a dainty, pretty, lively bird he is! See how quickly he runs across the smooth beach or trips lightly over the rougher ground, searching everywhere for the creatures on which he feeds! His long chisel-shaped beak pokes into the crevices and turns over the pebbles, exposing the crustaceans and other small marine animals. It also serves another important purpose, and that is to wrench off the limpets from the rocks, which he does with a sharp twist of his head, and then picks out the contents of the shell. At low water he is busy amongst the rocks, which are festooned with mussels, and then he is perhaps seen to best advantage, his very decided black and white plumage contrasting richly with the dark rocks and olive seaweeds. Many a time do I stand and watch this bird at the head of some quiet sea-loch when the tide is out, busy amongst the whelks and other shellfish. Or when the tide is coming in he is equally active, perhaps even more so than usual, as if he were anxious to get as much food as possible before the water covered the rocks. So eager does he search that the spent waves break round him, or he rushes into the foaming water as it recedes down the bank of sand to catch some little struggling worm or shrimp that has been cast ashore. At high water, especially in districts where his usual feeding grounds are covered by the tide, he may often be seen standing on some huge rock near the waves; and at St. Kilda I used frequently to see these birds fast asleep on the big stones waiting for the ebb.

The Oystercatcher is not what we can call gregarious, but it is very social, and often unites into little parties which feed and fly in company. In summer it is generally observed in pairs, and few birds are more attached to each other. If one of the birds is shot its companion flies round and round above its fallen comrade uttering its shrill mournful pipe, and every now and then swooping down and almost touching its body, utterly regardless of its own safety. I have seen the Oystercatcher fly about for hours above the body of its mate, which was lying in the sea, slowly drifting with the tide ; and sometimes several birds will come upon the sad scene and chant the death knell of their poor companion. Who shall say, after this, that the "lower animals," as man is so pleased to call them, are not capable of displaying sentiment as true and as tender as his own ?

At times like this we have a good opportunity of witnessing the Oystercatcher's great power of wing. Its flight is usually straightforward, the wings rapidly beating and producing a pretty effect as the white and black parts show out alternately ; but before the bird alights it often skims along just above the beach with outstretched wings, and when finally at rest keeps them elevated for a moment ere gracefully folding them. Nothing can exceed the wild impetuous dash of this bird as it rises from the shore when suddenly alarmed, and it often turns and twists about in a very erratic manner before finally settling down on its course, putting you somewhat in mind of the Jack Snipe. When wounded the Oystercatcher often takes to the water to escape, but I do not think it dives or swims at any other time. The Oystercatcher feeds on the various shellfish inhabiting the rocky and sandy shores ; but in addition to these it digs in the sand for worms, and picks up many small beetles on the higher ground.

In early spring the Oystercatcher is not quite so shy,

although its wariness is never relaxed. The breeding season is fast approaching, and as soon as May arrives we can search for its nest with the certainty of success. Its breeding grounds are on the shingly beaches, where the shore is thickly strewn with round pebbles and broken shells. A favourite situation is just above the line of drift in a quiet bay, where the pebbles are thickly strewn with scraps of dry seaweed, stranded corks broken loose from the fishing-nets, bits of worm-eaten wood, broken shells, and other refuse. This line of rubbish marks the limits of the high tides, and usually a yard higher up the beach the Oystercatcher lays her eggs. I have taken them in various other situations. Perhaps the most singular of these was on the summit of a low stack of rocks about fifty feet above the water. Another nest was made amongst the big boulders in a little bay in the cliffs, quite inaccessible to a human intruder, except by means of a boat; and I have seen many others on low rocky islands, but always amongst the shingle on the shore. The Oystercatcher never nests on the bare sand like the Ringed Plover, but always amongst the rough beach. A peculiarity about the nesting economy of this bird is its making several nests before it is finally satisfied. I have seen as many as six of these mock nests within a few yards of the one that contained the eggs. It may be that the bird moves its eggs about a good deal if the water threatens to wash them away, each time making a new nest for them in a place of greater safety. The Oystercatcher's nest scarcely deserves the name, and is only a hollow in the shingle, where the small pebbles and bits of broken shells and dry seaweed are smoothed into a bed for the eggs. These are usually three in number, but sometimes four, and in rarer instances only two. They are buff in ground colour, blotched and streaked and spotted with blackish-brown and pale gray. They vary considerably in size, shape, and markings. Some have more streaks on them than others, and some

have most of the markings in an irregular band round the larger end.

The Oystercatcher is never seen to rise from her nest ; she is too watchful and wary thus to betray its whereabouts, and takes wing long before you are on the breeding ground. The ever-watchful male bird is somewhere about the locality of the nest, always within call, and never fails to warn his mate of an intruder's approach. Suddenly the two birds rise piping into the air and career wildly about, uttering their loud note, which may be heard for a long distance along the shore and across the water. Several pairs generally nest near together, and when they are all on wing at once and calling lustily the noise is almost deafening. The wary birds know full well that their eggs are clothed in protective tints and require none of their protection. It is very noteworthy how the eggs resemble the pebbles and shells and shingle, and require a most diligent search to discover them. When the young are hatched they are of equally protective tints, and at the approach of danger hide amongst the stones, where it is almost impossible to find them. When the birds have young they become even more demonstrative, and swoop and scream round your head in utter anguish. If the first clutch of eggs are taken, the Oystercatcher lays more, but in no case is a second brood reared in the year.

In autumn the broods of young Oystercatchers and their parents keep in company and sometimes join similar parties, but I never see them in very large flocks. They do not wander much from home ; but in October many birds of this species visit our low-lying coasts from more northern lands, and they are often caught in the flight-nets.

THE RINGED PLOVER

(*Charadrius hiaticula*)

As you wander along the broad stretches of rich brown sand and cross the patches of shingle and broken shells, you may often see a little bird running along the edge of the waves, looking very conspicuous in its dress of white and brown and black. This is the Ringed Plover, a bird that may be found along those portions of the coast suitable to its requirements all through the year. Sometimes, especially in autumn and winter, you may meet with him on the mudflats tripping daintily over the shore, dodging the waves that ripple at his feet, and occasionally running into the water for a little distance to pick up some floating particle of food. He also frequents the banks of the tidal rivers; and during spring and autumn often visits large inland sheets of water, where he fraternises with the Common Sandpiper. But his favourite haunt is on the sandy coast or on the shores of the broad mountain lakes and salt-water lochs. If wary, he is by no means shy, and, provided you do not alarm him, he will trip about before you and let you observe his every action. During autumn and winter this little bird lives in flocks of varying size. If the district is suitable and food plentiful, the birds gather into large assemblies; if the sands are limited in extent, only small parties are met with.

There is not a more active or engaging little bird on the

coast. He is incessantly in motion, tripping over the sands and the shingle; now pausing a moment to dig up a worm from the sand, then running on again to join his companions. See him run after the retreating waves and search the wet shining sand as soon as it is free from water, being driven back again by the next wave that breaks along the shore. You may observe his conspicuous dress for a long distance across the sand or the mud; but when on the shingle you may often stumble over him before he rises with a sharp cry of alarm and flits rapidly before you a long way down the coast. His flight is quick, his long wings beating rapidly; but sometimes he skims along for a considerable distance, usually before he alights. He rarely flies very high, except when passing to a distant part of the shore, or when seriously alarmed—then he often goes some distance out to sea and hurries along close to the waves. His actions round the sheets of fresh water are much the same as on the coast. He frequents the shallow margin of the pool, and especially delights to hunt for food where a stream falls into the lake. I have seen this graceful little bird repeatedly on the stone walls which enclose reservoirs, and on the tops of weirs and sluices, running about with as much ease and activity as on the shore. It often utters its alarm-note when in these situations—a loud double note, something like the spring call of the male Chaffinch; but its usual call-note is a much harsher and more guttural cry. In spring this little Plover sometimes rises into the air and utters a not unmusical cry, which may probably be its love song.

The food of this pretty species is composed of the small creatures found in the soft sand and mud—sand worms, shrimps, and the inmates of the tiny shells. It is also quite an adept at catching flies, and finds many beetles on the higher grounds and near the inland fresh-waters. I have taken the remains of vegetable substances from its stomach,

so that it occasionally feeds on buds and shoots of marine and fresh-water plants.

The Ringed Plover is a rather late breeder. So far as my observations extend, I rarely find its eggs before the end of May, and in backward seasons not until early June. I have taken fresh eggs of this species even in the third week of the latter month. Its breeding grounds are principally on the sandy shores. It does not frequent the shingly beaches so much as the broad stretches of fine sand; it has a reason for this, which we shall soon discover when we have found its nest. In the late spring the big flocks of Ringed Plovers disband; many of them retire to more northern latitudes, and the birds return to their favourite breeding-places. But even in summer this bird still remains very sociable, and parties of six or eight individuals may constantly be seen feeding and flying together. The eggs must be carefully searched for, as the parent birds very rarely betray their whereabouts. Experience has taught me that it is of little use to hunt amongst the coarse shingle; but by confining my attention to the strips of fine sand I am soon rewarded by a sight of the nest. Nothing indeed could be more simple—sometimes a hollow is formed in the sand, but very often even that provision is dispensed with and the eggs lie on the bare flat surface. They are always laid well above high-water mark; and very often several nests may be observed quite close together. The eggs are four in number, dark cream in ground colour, minutely spotted with dark brown and pale gray. Most of the markings are very small, but generally a few large spots are scattered amongst them, principally at the large end of the egg. Having now the eggs before us, we can see why they are laid upon the sand. Their fine markings effectually harmonise with surrounding tints, but if they were laid on shingle they would be much more easily seen. The old birds never show much anxiety for their eggs,

as if fully conscious that they were far more likely to escape detection when left to themselves. I have found numbers of nests on one small stretch of beach, always on the sand, and the whole time the birds have been in little parties, running up and down the shore without showing any sign of uneasiness. In the hot June days the birds do not sit on their eggs much in the daytime, and probably the sun materially helps in hatching them. When the young are hatched, however, the behaviour of the Ringed Plovers is very different; and by many a wary artifice they strive to draw all attention upon themselves, until the downy chicks have had time to hide in the nooks and crannies on the beach. The bare sand is now deserted, and the old birds try to keep their young as much as possible upon the shingly shore, where they are least conspicuous. I do not think more than one brood is reared in the season; but if the first lot of eggs be destroyed another clutch is laid, and then the young are of necessity much later in their appearance.

I cannot leave this favourite little bird of mine without calling the reader's attention to the fact that there appear to be two races of it inhabiting this country. The larger bird is found on our coasts at all seasons, but the smaller variety is migratory and only visits us in the summer. I have examined many specimens of both races, and the differences are very marked when the birds are viewed side by side. Much confusion still exists, and the matter is well worthy the attention of the field naturalist, as very probably the smaller and migratory bird differs in habits, in voice, and haunts from its larger and resident congener.

Two other species belonging to the group of Plovers of which the Ringed Plover is typical must here be noticed. The first of these, the Kentish Plover (*Charadrius cantianus*), distinguished by having the back of the head and the nape buff, and the black collar only represented by a patch on

either side, is one of our rarest British birds. The coasts of Kent and Sussex are its only known breeding-places in this country, but it has occasionally been met with elsewhere as a straggler. It arrives in its English haunts at the end of April, and leaves early in September. It loves to frequent the quiet beaches where shingles and sands intermingle. In its food, habits, flight, and nesting economy it differs little from its congener, the Ringed Plover. It breeds towards the end of May, laying its eggs in a little hollow scraped on the shore. The eggs are four in number, yellowish-brown in ground colour, blotched, spotted, and streaked with dark brown and pale gray. Their smaller size, dark colour, and peculiar streaky markings safely distinguish them from those of the Ringed Plover.

To the British naturalist the Dotterel (*Charadrius morinellus*) is best known as a bird on migration, speeding to or from the arctic regions. Unlike its allies, the Ringed Plovers, it loves the uplands and breeds upon the tundras and the mountain tops. But very few of the Dotterels that pass over our islands on their way north remain during the summer, and these for the most part confine themselves to the summits of the highest and the wildest Scottish mountains. It is a very tame little creature, and seems to have no fear of man. It arrives at its breeding-grounds in parties, which soon disperse, and the serious business of the year commences. High up the mountains, in the haunt of the Ptarmigan, amongst the mosses and lichens, cranberries and rocky boulders, it scrapes a little hollow, in which the female lays three eggs during the first half of June. These are very handsome objects, varying from grayish-buff to olive-buff in ground colour, boldly blotched and spotted with dark brown and gray. They are not easily confused with those of any other British species, except perhaps with certain varieties of those of the Arctic Tern, from which they differ in having

fewer grayer markings. Singularly enough, in this species the female is the most brightly coloured, and the less showy male hatches the eggs and tends the young. Only one brood is reared in the season. Insects, worms, and tender shoots of herbage are the Dotterel's principal food. The Dotterel migrates very quickly in spring, coming from its winter haunts in Africa to England in a night; but in autumn it passes south more leisurely, and often stays a day or so on the lowland pastures.



THE GOLDEN PLOVER

(*Charadrius pluvialis*)

THE Golden Plover is another of those birds that change their haunt according to the season. In winter it loves the lowlands ; the coasts cannot be too flat, and the marshes too wet with salt water, for this pretty bird ; but in summer these places lose all their charm, and it quits them for the high moorlands and mountain sides of the inland districts.

From the shore
The Plovers scatter o'er the heath,
And sing their wild notes to the listening waste.

Few birds are more locally distributed than the Golden Plover, especially in the breeding season ; and to study its habits in summer time we must visit once more the brown heathery wastes of the north. These moors are the summer

home of many migratory birds. In winter they are almost deserted of bird-life—only the Red Grouse lives upon them ; but with the budding springtime every part of their broad expanse becomes the chosen retreat of various birds. None of these are more obtrusive than the Golden Plover. He loves the broad hollows which are full of swamps and reed tufts, studded with patches of heather, and here and there with little pools of clear sparkling water, on whose banks small willows and a few silver birches find root. Or you may meet with him still higher up the hillsides, on the very summits of the smaller mountains, where ground fruits flourish, and the soft peaty soil is furrowed with countless ridges, which in wet weather become tiny rills. Here the ground is almost as uneven as a restless sea, thickly clothed with coarse vegetation ; endless little hillocks and hollows, tufts of cotton grass and rushes, patches of bilberries and cranberries, and here and there a few bushes of heather. As soon as you set foot on this wide expanse of wilderness, the Golden Plovers rise into the air and protest against the intrusion of their solitudes. If it be early spring you may chance to see the birds in flocks which have not yet broken up into pairs, and then they are more wild than usual, and often soar to a great height, and wheel round and round above your head uttering their wild expressive notes. A week or so later these flocks have vanished, and the birds will only be met with in scattered pairs, as you may chance to intrude upon their breeding grounds. Then the Golden Plover loses much of its accustomed shyness, and often runs up and down over the little mounds, or stands looking at you from the summit of a tuft of grass. How daintily they poise on these little summits, or trip into the hollows ; now flying a little way, and then alighting again with uplifted wings to run some distance or stand a few seconds before finally folding them ! And then how beautifully their speckled

golden upper plumage contrasts with the vernal verdure, and how conspicuous their black bellies look as they rise into the air! Ever and anon their wild flute-like whistle, sounding like *Klee-wee*, breaks the stillness of the fresh mountain air, and is answered from all parts of the moor. Should you remain long watching their movements, every bird in the district takes up the alarm, and you see them rising from the heath or settling down again on every side, and hear their piercing notes from all parts of the moor. The flight of this bird is powerful and at times very rapid, performed with regular beats of the long wings; but we never see this Plover indulge in those aerial movements which are so characteristic of the Lapwing.

In summer the Golden Plover feeds almost exclusively on worms and insects. These birds are not what we can call gregarious in summer, although numbers breed on the same stretch of moor; still they are eminently social among themselves, and often feed in parties. I remember once to have come across a small flock of these birds, which were feeding on the maggots in a dead sheep lying a little distance from a rough wall. Through a hole in this wall I was able to watch the actions of these pretty birds; and it was a curious sight to see them running nimbly over the sheep's body, some of them half hidden amongst the wool and flesh, and all so eager in their search for food as to allow me to approach them actually within a few feet before they took wing. I have often seen them in the rough pastures, close to the moors on which sheep and cattle are turned out to graze during the summer. Here they frequent the droppings of these animals, and turn over the manure for the beetles and small worms; and they also search for food in the little swamps, and by the sides of the mountain pools. When on the moors in summer they eat various kinds of seeds, as well as the buds and shoots of plants. In winter the Golden

Plovers feed on the various marine animals which are cast up by the waves, or lurk in the mud and ooze of the low-lying shores.

If you wish to find the Golden Plover's nest you must delay your visits to its breeding grounds until the middle of May, and if the season is a late one, a week later still. You may soon ascertain if the birds have begun to lay by their movements when you approach their haunts. They are exceptionally tame, and as a rule the male birds alone come first before your notice. Like watchful sentinels, they stand on the little knolls and give the single plaintive warning-note to their mates. If approached they often run a short distance, then mayhap take wing and wheel round your head, then alight on an adjoining mound and stand and watch your movements. While your attention is confined to the male bird, the female has already slipped off her nest at the first warning cry and soon joins him. You may then be sure the eggs are laid and not very far away. Search carefully amongst the tufts of cotton grass, or beneath the shelter of any little prominent tuft of vegetation, and you will soon be rewarded by a sight of the Plover's home. It is but a simple little affair—just a hollow lined with a few bits of withered herbage, but beautifully smooth and round. In this the female lays her four richly-coloured, handsome, pear-shaped eggs. They are remarkably large for the size of the bird, very similar to those of the Lapwing, but much brighter looking and richer in colour. The ground colour is more inclined to buff than olive, and the markings are deeper brown and larger. You will observe that these eggs are most protectively coloured, and are very inconspicuous on the moorland waste. The parent birds know this full well, and the instant danger threatens they leave them to the safety their brown tints ensure. As soon as the young are hatched the parents become even more anxious for their safety, and often reel and

tumble along the ground to decoy an intruder away. The young chicks themselves are cunning little creatures, and hide amongst the herbage at the approach of danger. Here the yellow down, spotted and blotched with black, with which they are clothed assimilates with surrounding objects and makes their discovery exceedingly difficult. Both birds assist in hatching the eggs and attending to the young, and only one brood is reared in the year.

When once the young are able to fly, the Golden Plovers begin to collect into flocks. Brood joins brood; young and old gather together; but they still frequent the moors as long as the weather remains settled. At the first approach of the autumn gales the flocks become still larger, until it seems as if all the birds on the moors for miles had united in one vast company, and then they leave for the distant coast, travelling by night. Here they frequent the wide expanses of mudflat and salt-marsh, searching for their food when the tide has ebbed and left the shores full of their favourite food. In the late autumn days, say when October's month is waning, I often watch the migrations of the Golden Plover. In addition to the birds that have bred on our own hills and mountains, vast numbers of this pretty bird come from the northern regions; and for days and nights they may be seen and heard passing along the coasts in countless thousands, many of them bound for still more southern lands. These vast flocks of Golden Plovers obtain much of their food at night, especially when the moon is near the full; and you may watch them running about the shining mud in quest of food, wading in the shallows, or waiting in a crowded mass on some outlying spit of land for the waters to subside. They often visit the wet marshy meadows near the coast during the period of high water. They are much more wary now than when we saw them at their nests, and when alarmed the whole flock often rises into the air and performs various

graceful evolutions. These birds are sometimes caught in the flight-nets on the coast, and are much sought after by the shore-shooter, for their flesh is highly prized as an article of food. I sometimes think that many of the Golden Plovers that breed on our moors go far to the south in winter, and that most of the birds we see on the coast at that season are from the high north. Migrating flocks of these birds cross country in flying south in autumn, instead of passing along the coast, and return, as I have sometimes seen them on the southern downs, flying due north in spring.

THE REDSHANK AND KNOT

(*Totanus calidris* and *Tringa canutus*)

NEXT to the Common Sandpiper, the Redshank is perhaps the best known of its order, though in summer especially it is somewhat locally distributed. Like most wading birds, the Redshank changes its haunts with the change of season ; in winter frequenting the mudflats and coast-marshes and the banks of tidal rivers ; in spring retiring to inland moors and fens for the purpose of rearing its young. The drainage of so much marshy ground of late years in the fen districts has destroyed many a wild breeding-place of the Redshank, and caused the bird to retire still farther into the wilderness. Nothing can perhaps exceed the dreariness of the wide expanding wastes of mud on the low-lying coasts during summer time. But few birds approach them. Now and then the Gulls beat slowly along over the shallow sea, or perhaps a Heron or a Wild Duck may be seen upon them. But with the approach of autumn the scene changes as if by magic. Birds in countless thousands appear upon these uninteresting mudflats, and suddenly imbue them with life. Flock after flock comes pouring in from across the sea and from inland moors and mountains ; bird after bird is driven from the ice-bound north, and bends its southern flight to the perennial store-houses of food to be found on these dreary strands. The Redshank is amongst the first to arrive, appearing in flocks on the tide-flats early in the waning year. It is an interesting

little creature, easily recognised by its long, bright, orange-coloured legs, and is very like a Sandpiper in its movements. Like most coast birds it is very wary, and you must be content to watch it tripping over the mud and sand at a safe distance. Every little wave that breaks upon the shore in its vicinity is closely watched, and the sand is probed here and there with its long beak. It is an active little creature, incessantly in motion when the tide is ebbing and flowing; but sometimes at high water it may be seen standing on the narrow banks of mud waiting for the strand to become exposed again. The Redshank becomes particularly lively at dusk, and much of its food must be obtained by moonlight. Numbers of these birds are caught in the nets placed to catch the different kinds of wild-fowl that wander up and down the coast and over the shallow waters. Its food in winter is principally composed of sand worms, marine insects, and the inmates of various small shells; but in summer it lives on insects and larvæ, and in some districts will even eat bilberries.

At the first sign of spring the Redshanks quit the coasts and visit their breeding-places on the higher ground. This may not be far away from their winter quarters—on the fens and broads of the low-lying counties, or on the moors above the sandy coasts. Very often the birds visit the distant mountain lakes and flat stretches of bog amongst the hills, miles and miles away from the sea. Here, like the Lapwing and the Golden Plover, it is ever on the alert, and the moment you set foot on the moor the wary Redshanks rise into the air, rapidly uttering their loud double-note. Should the eggs be laid, the birds become more trustful, and sometimes allow you to approach them as they run anxiously about the moor. They are conspicuous objects when perched on the top of a tuft of cotton grass or rushes, and look very pretty as they trip round the margin of the pools, or even run along

the rough walls and fences in their anxiety and excitement. The male bird at this season may often be seen soaring in the air and descending with wings and tail expanded, uttering a shrill note very rapidly; and he often begins these flights by starting from a stump, wall, or a tree, and returns to the same place, much after the manner of the Meadow Pipits that live upon the moors with him. They rarely go far away now when disturbed, and usually fly on rapid wing for a short distance, or perhaps run along the ground with their wings elevated and half open. According to the state of the season, the Redshank begins to lay by the end of April or the middle of May, and several nests may usually be found within a small area of ground. In a dense tuft of grass or rushes, or beneath the shelter of a heather bush or the bilberry wires, the Redshank makes its nest—simply a hollow, lined with a few bits of dry grass, rush, or scraps of heath and bilberry leaves. In this the female lays her four pear-shaped handsome eggs, buff in ground colour, boldly blotched and spotted with rich brown, chiefly on the larger half of the shell. These eggs are very protective in colour; and the wary birds leave them the moment danger threatens. I have known this bird, when the eggs were highly incubated, flutter along the ground as if wounded, and try by many artifices to draw all attention upon herself. Only one brood is reared in the season, and the young are tended by both parents, the whole family keeping much together for the remainder of the year.

The next species whose habits and economy we are about to notice is a very local one, and of exceptional interest to ornithologists. Indeed, this unusual interest attaching to the Knot must be my only excuse for including it among our rarer birds, in spite of the fact that it does not breed in this country. The Knot is an arctic bird, penetrating every summer into the most remote districts of the polar regions, going as far north as land extends. Here it rears its

brood during the short but hot arctic summer, and then hurriedly comes south again as soon as its autumn moult is completed. Although the Knot frequents certain parts of our coast in countless thousands every year, not one of these birds remain to breed, and its eggs have never yet been taken by man. The immigration of the Knot into this country begins as early as August, and the birds continue to arrive in thousands until the end of October. Singularly enough the young birds are the first to come (piloted by a few adults), and they are followed a little later by their parents. Few shore-birds are more gregarious than this little arctic wader, and flocks composed of thousands of individuals frequent the boundless mudflats, feeding on the edge of the incoming tide, or frequenting the margins of the big pools of salt water on the marshes. Vast numbers of Knots are caught every autumn in the flight-nets, and the shore-shooter is ever trying to discharge his gun at the flocks of this interesting little bird. The young birds are remarkably tame on their arrival. They have had no experience of man in the country which they have just left, but incessant persecution soon makes them uncommonly wary and suspicious. They run nimbly about the shore, generally all the birds in a flock heading in the same direction, searching systematically every foot of ground. When alarmed the whole flock rises at once, and often performs various graceful evolutions in the air before settling again on a distant part of the coast.

Knots feed at night as well as by day, and I have often watched them on the mudflats by the light of the moon running about near the sea, or huddled together on a sand-bank in a dense mass waiting for the water to subside. When feeding the Knots are constantly in motion, and every now and then a bird flutters up into the air and passes over its companions to search a fresh bit of ground. Here in this country the food of the Knot is composed of small marine

animals, such as sand-worms, shrimps, mollusks, and even on stranded starfish and little crabs. I have taken remains of small black beetles from their stomachs.

By the middle of May most of the Knots have deserted our mudflats and maritime marshes, and sped northwards to the arctic regions for the summer. They lose no time on the way, and must begin breeding soon after they arrive. The summer in those latitudes, if bright and sunny, is remarkably short; besides, the young birds reach our shores amongst the very earliest of the autumn migrants. Of the habits of this bird at its breeding grounds I know nothing from personal observation; but its young in down are exceedingly pretty little creatures, grayish-yellow, mottled with black and brown—tints probably of greatest service in concealing the chick from its many enemies. There can be little doubt that in the number and colour of its eggs, and in its nesting economy generally, the Knot does not differ from its close allies. The Knot is remarkable for the great difference in colour of its summer and winter dress. In winter it is grayish-brown on the upper parts, and nearly uniform pure white on the under parts; but in spring the former portions of its plumage are black and chestnut, and the latter become deep reddish-chestnut.

The Greenshank (*Totanus glottis*), distinguished from its allies by its uniform brown secondaries, breeds sparingly in the wildest districts of the Highlands and the Hebrides. It is one of our most local summer migrants, best known during the seasons of passage, when it is fairly common on the low-lying coasts. It arrives in April and May, and the southern flight extends through September and October. In many of its habits it resembles the Redshank. Its haunts are the moors and desolate islands, especially those where there is an abundance of water and swamp. It feeds on insects, crustaceans, worms, and even small fish. Late in

May the Greenshank makes its scanty nest amongst the heather or coarse vegetation in the dryest parts of its haunts, generally on some little eminence. It is merely a hollow, lined with a few bits of dry grass and leaves. The eggs, four in number, are pale or dark buff in ground colour, boldly blotched and spotted, especially on the large end, with dark brown and violet-gray. When its breeding grounds are invaded by man the Greenshank becomes anxious and noisy, careering wildly about the air, uttering its loud double-note, or alighting on the moor and running along the ground. As soon as the young can fly, the birds leave the moors for the nearest coast, and as autumn approaches gradually move southwards.

THE DUNLIN AND PHALAROPE

(*Tringa alpina* and *Phalaropus hyperboreus*)

THE Dunlin is another common little bird of the shore, frequenting the sands and mudflats through the winter, retiring to the moorlands in summer for the purpose of rearing its young. It is certainly the most gregarious Sandpiper on the coast, and not only lives in vast flocks during winter, but in the breeding season may frequently be observed in parties of considerable size. The active little Dunlin is a special favourite of mine, and his actions on the beach or the moorlands never fail to interest me. As you wander along the muddy shore in autumn, you are certain to meet with this charming little species—there is not a bit of mudflat or sandy marsh round our coasts that does not contain Dunlins in more or less abundance from September till the following spring. They are by no means shy, and often search for their food and run about the sand and mud a few yards from where you are standing. The larger the flock, however, the more wary they seem to become, and at the least alarm the entire mass of birds rise simultaneously, just like Starlings, and hurry away across the sea, or along the marshes to a place of greater safety. The Dunlin's aerial movements at this time of year are very beautiful and interesting. Moved as with a common impulse, the immense flock of birds rise from the black mud, and rise and fall and manœuvre with wonderful precision. As they turn, their wings gleam like a dull silver cloud in the

sun ; and ever and anon the flock seems to vanish and appear again as the dark or light part of their plumage is turned towards you. Sometimes they spread out like a net, perhaps ten thousand strong, then close up again into a dense black-looking mass, rising for some distance and swooping to the ground with great velocity, or perhaps skimming just above the mud for a hundred yards or more before alighting with the same startling precision and regularity of movement.

What will strike the observer as rather extraordinary is the quietness which attends all these movements. Except at the breeding grounds the Dunlin is a remarkably silent bird, and rarely utters a sound. When feeding, the entire flock of birds scatter themselves far and wide over the mud, each seeming to pursue an independent course ; but when alarmed they quickly close together as they rise. Its food when living on the mudflats and marshy coasts is sand-worms, small mollusks, shrimps, and other minute inhabitants of the shallow water and slimy mud ; but in summer it is almost exclusively composed of insects and their larvæ, especially water-beetles and the larvæ of the drake fly. The Dunlin also eats quantities of moorland fruits, and I have taken various vegetable fragments from its stomach. A favourite feeding ground of the Dunlin in winter is on the slimy banks of tidal rivers, and in the marshy backwaters of the low-lying coasts. I have seen single birds of this species running about on the dense weeds in these stagnant pools, and often meet with it here and there in the deep drains which spread out like a net over the wide expanse of mudflat. When thus met with singly these Dunlins are remarkably tame ; and on one occasion I remember actually taking one up in my hand without it making any effort to escape.

The Dunlins quit the coast by the end of April. In early May, when the first blushes of spring are creeping over the mountain wastes, they are back again at their breeding-places,

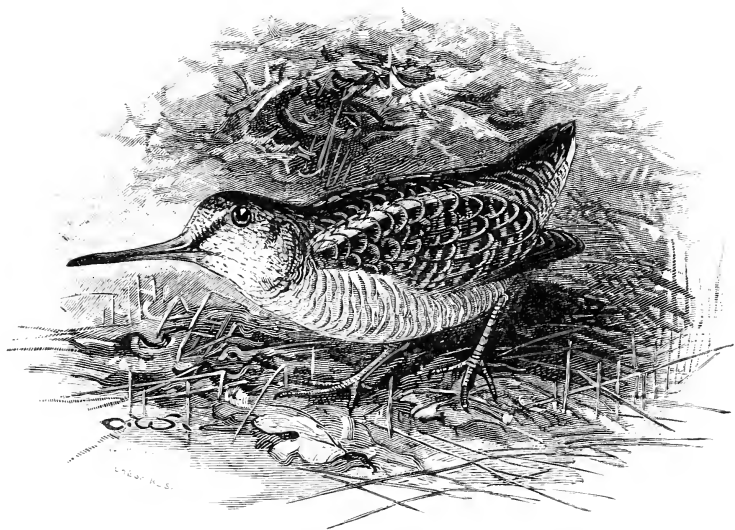
although it is seldom much use to look for their eggs before the end of that month. The Dunlin enlivens the moors with its cheerful little note, which somewhat resembles the call of the Yellow Bunting or the Greenfinch; and ever and anon the males flutter up into the air and descend on motionless wing and expanded tail, uttering a pleasant trilling sound. This pretty little bird is now much more gay in plumage, having assumed nearly black lower parts, and bright chestnut and black on the head and back. It is also worthy of remark that the female is slightly larger than the male. The nest is always well and artfully concealed on the moor, perhaps by the side of the clear pool amongst the rushes, or under a tuft of heath or bilberry, or behind a dense mass of cotton grass. The nest is a hollow, lined with a few dry bits of the surrounding vegetation; and the eggs are always four in number. They are greenish or brownish buff in ground colour, boldly spotted and blotched with dark reddish-brown and pale grayish-brown. The usual type of egg is most thickly marked at the larger end, but sometimes we see them with the spots evenly distributed over the entire surface. The sitting-bird leaves the nest at the least alarm, leaving the eggs to the safety of their own protective tints. Even during the breeding season I often meet with the Dunlin on the coast perhaps some considerable distance from its breeding grounds. Parties of males and females often meet together on the shore at this season, and retire each to their own particular haunt as soon as their wants are satisfied. Dunlins only rear one brood in the season.

Another rare little bird is still to be met with in a few chosen localities in the most secluded parts of the upland wilds. This is the Red-necked Phalarope, a species which is readily distinguished from all the other little Sandpipers by its singularly-shaped feet, which are provided with lobes almost like those on the feet of a Coot. The surprising tame-

ness and trustfulness of its disposition have been the cause of its extinction from many a mountain haunt; and if the persecution does not soon be stayed, this, one of the most charming of British birds, will become extinct in our islands. In many of its actions this pretty little bird resembles a Moorhen. Like that bird it runs about the banks of the sedgy pools, incessantly bobbing its head up and down, and on the water it swims with similar motion. The Red-necked Phalarope is as much at home in the deep clear pools as on the land, and spends much of its time swimming about, occasionally snapping at passing insects, or exploring all the vegetation round the margin in search of food. It is absurdly tame, and often allows you to watch its every action within a few paces. It is a very sociable bird, and many nests may be found in quite a small area of the swamps.

The Red-necked Phalarope arrives at its breeding grounds early in May, and soon afterwards its slight nest is arranged. It loves to frequent for this purpose wide expanses of marshy moor in which there are many clear pools surrounded with rush and sedge and coarse grass. The nest is rarely built very far from the water, and is usually well concealed amongst the herbage, which often hangs quite over it. It is merely a hollow scratched out in the ground and lined with a few bits of dead grass and rush. In this the female lays four buffish-brown eggs, blotched and spotted with dark blackish-brown and paler markings of gray. One of the most interesting facts connected with the nesting economy of the Red-necked Phalarope is, that the male bird hatches the eggs and assists the most in bringing the young chicks to maturity. All effects in Nature have a cause, although we may not perhaps be able to connect one with the other; but in this case the reason why the female resigns her usual duty to her mate is because she is much more brightly coloured, and would thus be more likely to attract enemies to her helpless charge.

The parent birds show little concern for their nests when an intruder visits them. Quietly swimming about in the sedgy pools, or running along the marshy banks, they now and then utter a feeble *weet-weet* of mild remonstrance. As is the case with the Dunlin, they are remarkably social during the breeding season, and numbers gather on the favourite ponds from the nests which are scattered up and down the higher and dryer ground. The food of this bird is composed largely of beetles and the larvæ of various water insects. The bird also probes the soft mud with its slender-pointed bill for worms, and is an adept at catching flies. The Red-necked Phalarope is not often seen on the wing; it spends by far the greater portion of its time in the water, where it floats as buoyantly as a cork or a bit of paper; but when flushed it is capable of flying very rapidly, and has no small command over itself in the air. When the young are safely reared and autumn is at hand, the Phalaropes forsake their moorland haunt and wander southwards to their winter quarters in warmer and more genial lands.



THE WOODCOCK

(*Scolopax rusticola*)

PERHAPS no species of Wader is better known by name than the Woodcock, yet how few persons are acquainted with this shy bird's habits and economy. It may justly rank with our rarer birds, and though widely dispersed during the winter months, in summer it is exceedingly local, and its habits are known to none but the most observant field naturalist. The Woodcock resides in our islands throughout the year, but it is one of those species that changes its ground very capriciously, and is far more numerous and widely dispersed in winter than in summer. In the balmy autumn days great flights of this beautiful bird come from across the sea and arrive on our eastern shores, from which they gradually disperse over the inland woods and plantations. I have several times been on the low-lying coasts, watching the ways and doings of my

feathered friends on marsh and mudflat, when the Woodcock has made its appearance. Woodcocks migrate by night, and usually at a great height in the sky, dropping suddenly down when they reach the ground, so that they are rarely taken in the flight-nets. Over night not a bird is to be found; but by the first streak of dawn, should you chance to wander along by the sea, Woodcocks may keep springing up from your feet—tired-out birds, glad to nestle among the long grass and in the bottoms of the hedges, to recruit their failing strength ere passing on to more suitable haunts. The birds rarely stay more than a day here—the next night they are off to the woods and the marshy hollows in the plantations and quiet corners of the fields, which they frequent for the remainder of the season. Nut-brown October is the Woodcock's favourite month for migration—a month that paints the vegetation of wood and field and copse in tints every bit as brown and as beautiful as the bird's own charming dress. The Woodcock loves to hide himself amongst the crumpled dark brown leaves, where his plumage is in strict harmony with surrounding tints, and shields him effectually from the prying eyes of his enemies.

At all times the Woodcock is a shy skulking bird, remaining close in his retreat until flushed, when he rises suddenly, often uttering a harsh guttural croak, and flies off in singular erratic course through the trees. It is rather surprising how cleverly the bird manages to thread his way through the network of fine branches and past the numerous tree-trunks. He does not fly far as a rule, and drops into the first suitable cover he can find, alighting suddenly, and usually crouching close the moment he touches the ground. His flight is quick but somewhat laboured, because his body is so plump and heavy, and he carries his long bill and head bent downwards. The Woodcock's activity begins with the twilight. His large prominent eye denotes him to be a night feeder, and as the

dusk spreads over the woods and the shadows deepen under the trees, he rises from his warm corner amongst the long grass and dead leaves, and flies slowly off to his feeding grounds. Sometimes these are a considerable distance from his day retreat; at other times he cowers amongst the herbage by the side of the stream or swamp in which he feeds. On the bright moonlight nights you may perchance be fortunate enough to see him wandering about in the open searching for worms, probing the ground with his long beak. He looks unusually large in the uncertain light, and appears to be intently listening every few moments, as if constantly on the alert for danger. He walks about or runs along the pond-side in Snipe-like style, and as his appetite is large he is very eager in his search for food. Earth-worms are the Woodcock's favourite and almost exclusive food, but the bird also eats beetles and other insects.

Few birds are more solitary in their habits than the Woodcock. It is perhaps most sociable during the periods of migration, but then its gatherings are greatly influenced by a common purpose, and as soon as the journey is over each bird seems to set off to its own particular haunt. One is apt to feel perplexed at the solitary habits of the Snipes when we know their relations, the Sandpipers and Plovers, are so gregarious; but doubtless their conspicuous plumage in the open and, consequently, their skulking habits are the cause. It is a curious fact that the Snipes and the Woodcocks never change the colour of their plumage in winter, from the beautiful brown and yellow dress of summer to one of grayer tints, as the Sandpipers and most of the Plovers do. But we know that these Snipes never change the character of their haunt; they always live amongst dense vegetation, where their brown mottled dress is least conspicuous. They never visit the muddy coasts or shining sands, because there their plumage would readily betray them to enemies. When the

Sandpipers and upland Plovers assume their nuptial ornament, we also find that they change their haunts accordingly, and then frequent moors and marshes, where their showy dress is least conspicuous.

The Woodcock breeds early; and the habits of the male birds during the pairing season undergo a most extraordinary change. They cease their skulking habits, and in early morning and in the evening's dusk fly up and down the open spaces in the woods, or along the drives and keepers' paths, or even in the fields close to the woods and plantations. Up and down, to and fro, he flies, uttering a peculiar whirring note, which is most probably equivalent to the drumming of the Snipe, and uttered for a similar object—namely, to charm and to win the female. At this season the male Woodcock is also very pugnacious, and combats between rival birds often take place. Early in April the pairs of Woodcocks seek out their nesting-places. In some dry quiet corner of the wood or plantation, amongst the tall withered bracken, or at the foot of a tree, where the dead autumn leaves have drifted, the nest is made. It is a small depression, rather carefully and smoothly lined with dry leaves and bits of grass and fern. Like those of the Snipe, the eggs of the Woodcock are always four in number when the full complement is laid. They are buffish-brown, or pale yellowish-brown in ground colour, spotted and blotched with reddish and grayish brown, principally on the larger end. Eggs of the Woodcock are somewhat conspicuous objects, so that we find the sitting-bird keeps close upon them, and shields them with her own beautifully protective dress, until she is almost trod upon and forced reluctantly to leave them. When you know the whereabouts of her nest, it is easy to steal softly towards it and observe how closely her mottled russet-brown plumage harmonises with the rich brown tints of last year's bracken and the dead oak leaves. I have never known the Woodcock

cover her eggs when she left them voluntarily, but I think that such is very probably the case. But one bird is ever seen near the nest, and once flushed the female generally hurries off and hides herself amongst the trees, never displaying any of those anxious feelings some of the Sandpipers always express under similar circumstances.

The Woodcock's movements in this country are somewhat perplexing to the naturalist. Many observers are inclined to think that the birds which breed in our British woods leave this country for more southern haunts in autumn, returning in spring ; and that the birds we meet in winter are migrants from more northern regions, which just as surely desert this country in spring. There can be no doubt, however, that our breeding Woodcocks are residents, and that the reason they are so seldom met with in the late summer and early autumn months is because these skulking birds have become more skulking still while they undergo their annual change of dress. The woods at these times are little frequented by man ; the shooting season has not commenced ; and the shy wary birds keep well out of sight, as most other species do when moulting. The Woodcock only rears one brood in the season, and both parents assist in rearing the young, which are sometimes carried by them between their legs from place to place where food is plentiful.

The flesh of the Woodcock is highly prized for food ; no greater delicacy is to be found amongst all our game birds and wild-fowl. It is therefore a bird highly and justly esteemed by sportsmen. How quickly the plump long-billed bird flies for his life through the brown autumn woods, or amongst the snow-clad trees in winter, his appearance being the signal for the lusty shouts of "mark cock" from the line of advancing beaters. A beater I knew, who was in the habit of occasionally attending the late Duke of Portland through the charming woodlands of the "Dukeries" at Sher-

wood Forest—a district where the Woodcock is extremely common—would always persist in calling these birds “Wooden-Cocks.” Poor “Jim’s” ashes are mouldering in the dust, yet his “Mark, my Lord—a Wooden-Cock” is still a standing joke at many a convivial gathering.

Formerly the Ruff (*Machetes pugnax*) was a fairly common bird during the breeding season in all the marshy districts of England suited to its requirements; drainage and modern improvements have driven it from its ancient homes, and now only a scattered pair or so remain behind to breed on the Norfolk broads. The Ruff arrives late in spring, and is best known as a bird on migration along the British coasts. The Ruff is specially interesting to the naturalist owing to its polygamous habits, and the great diversity and eccentricity of its plumage. For a month after the arrival of this species at its breeding grounds, incessant combats are being fought between pugnacious males for the possession of the females—regular meeting-places or “hills” being used for these singular tournaments. As soon as the Ruff’s numerous females have laid their eggs he takes no further interest in his mates, and, like the cock Pheasant, leaves them to bring up their broods alone. The nest is a slight one, made of bits of withered herbage, in a dry spot amongst the wet marsh; and the eggs, four in number, are greenish-gray in colour, spotted and blotched with reddish-brown and gray. The food of the Ruff consists of worms, insects, and mollusks, which the bird prefers to seek in the marshes rather than on the coast.

THE CURLEW

(*Numenius arquatus*)

THERE is not perhaps another science which leads its votaries into so many varied scenes as that of Ornithology. The bird is everywhere. No desert is too arid, no ice-bound region too cold, nor sunny land too warm, for bird-life. Even the ornithologist, who studies the birds of our native land alone will be led into the most diversified scenes whilst pursuing his researches, and experience those indescribable feelings of enthusiasm and excitement only known to the field naturalist. Now he is wandering over the trackless moors in quest of Grouse or Merlins. Alone he may be on those heathery wastes, but his thoughts are so intent upon the object of his visit that he knows not that sense of loneliness which the wilds ever inspire in him who has no taste for Nature or her works. Anon he is in the coppices or the fir woods, where the bold and wary Sparrow-hawks, the crafty Pies, and the gentle Doves, nestle in company with the tiny Goldcrests. Now he roams over the tide-washed flats, and the hordes of wild-fowl greet him with their varied and expressive cries ; or he seeks the rock-bound coast where the Guillemot, the Razorbill, the Kittiwake, and the Peregrine breed in the beetling cliffs. While yet again the shady forest teems with bird-life, and his wanderings there are enlivened by the notes of birds whose inherent timidity keeps them to these leafy solitudes. No matter where the observer may stray, bird-life in all its ever-

varying phases glances panorama-like before his admiring gaze. Alone in Nature's sanctuaries, with these fair ornaments of field and shore, he feels not the absence of his kindred. The science of his choice absorbs him with ever-increasing interest, and inspires him with feelings he never knew before. Reader, pardon these few random musings on the breezy rain-washed moor; the shower has passed; we will now busy ourselves with the habits and economy of the wild and wary Curlew.

Like most of our wading birds, the Curlew changes its haunts at certain seasons of the year, and is also a partially migratory species. But it is very probable that the birds which nest in this country are residents, the migrants being birds which breed in northern regions, and are compelled to journey south when the sun quits their arctic haunts and the long polar night begins. In summer the Curlew's haunts in our country are the moors and upland wastes; and the flat marshy shores and estuaries are its chosen retreat in winter. Let us make our first acquaintance with him on the moorlands. The vernal season is expanding in all its lovely freshness. The Skylark is pouring forth his tuneful melody, and the Song Thrush and Blackcap are warbling from the copse. But we must leave such sylvan birds; our quarry is higher up the hillsides, on the bleak moors and rough mountain wastes. On the threshold of the moor the Lapwing anxiously beats over the rough pastures, uttering her melancholy wail as we invade her nesting ground; the Stonechats flit amongst the gorse; and on the wild moor the Twite sits on the heather tufts, ever and anon calling its name to the wilderness. Perched on a rocky boulder, the Ring Ouzel sits and pipes his mountain song; and the whistle of the Golden Plover, alarmed at our approach, and the harsh *go-bac-bac-bac* of the Red Grouse, herald our entry upon the upland wastes. We stroll expectant over them, but the ever-watchful Curlews are

prepared for us. One by one the dark-coloured birds rise from the marshy heath and fly anxiously about, uttering their peculiar note: *curlee, cur-lee* sounds in all directions, and the startled birds watch our actions from the sky with ever-increasing anxiety. Like the Snipe, the Curlew performs those various graceful evolutions high in air, usually when its haunts are invaded. But what are the Curlews doing here? Why have they left the lowland pastures and littoral haunts for such scenes as these? The one great object of their visit here is to rear their young in a suitable temperature, where the food supply is ample, and where they may obtain that seclusion and immunity from danger which their shy and wary nature demands. Search closely among the heath and coarse vegetation of the moor, and you will most probably be rewarded by a sight of their nest and eggs. Your attention must be confined to the extensive swampy flats, where bogs, reeds, and rushes are abundant, occasionally studded with heathy tracts of dryer ground.

We can scarcely class the Curlew as a gregarious bird during the breeding season, but still it is to a certain extent a social one, and numbers of their nests may be found scattered up and down the same reedy wastes. Curlews pair annually, sometimes before they quit their winter quarters, and sometimes not until they arrive at their breeding grounds. The Curlew's nest may be sought by the middle or latter end of April, though not unfrequently the birds do not commence breeding till early May should the weather be stormy. The nest is usually placed on some little patch of dry land, where its scanty materials serve their small purpose. It will sometimes be placed on a thick tuft of bog grass, at others under the shelter of a heather bush or clump of herbage, and is almost invariably on some little eminence. More rarely the eggs are deposited in the scantiest apology for a nest on the ploughed fields—the “summer fallows” on the borders of the

bird's usual haunts. In such situations I have known them to be broken by the harrows, or trod under foot by the cattle and sheep grazing on the rough herbage. The Curlew's nest is slight, and in some cases is dispensed with altogether. Its materials consist of a few bits of herbage carelessly arranged in a small cavity, either scraped out by the bird, or selected ready-made for the purpose.

The eggs of the Curlew are very large for the size of the bird. Comparatively large eggs, be it known, is the rule with this order of birds (Waders); but with the Curlew, and perhaps its cousin, the Whimbrel, they are exceptionally so. They are four in number; sometimes five are found, but it is extremely probable that the odd egg is the produce of another female, or one from another nest placed there by some mischievous cowboy or shepherd. The eggs in this order of birds are always four in number, and to credit the Curlew with *five* would make it quite exceptional to all the nearly allied species. In form some specimens are much more elongated than others, but as a rule the colour variation is small. They are yellowish-green in ground colour, spotted and blotched with dark yellowish-brown and olive-green, and occasionally streaked on the large end with deep brown. Both birds assist in incubating the eggs, and but one brood is reared in the year. Should the eggs be taken, however, others will be laid—as a proof of which witness the broods of this bird which are to be seen as late as the end of July.

Throughout the breeding season the Curlew is a noisy bird, and accompanies the wanderer over its breeding grounds high in air, usually at a safe distance. Few sounds add more to the grand impressiveness of the uplands than the Curlew's mournful cry; and we have not a bird whose wild notes lend so much life to the dreary sameness of the mountain wilderness. As is usual with species whose eggs are eminently protective in colour, the sitting-bird quits the nest the instant

danger threatens, and I do not find it ever display those peculiar alluring motions which are so common among the smaller waders. Young Curlews, as is the case with all the birds of this order, are able to run about almost directly after they are hatched. Engaging little creatures they are, and most grotesque in appearance. They are clothed in down of yellowish-brown, mottled and spotted on the upper parts with darker brown, and their beak is short and straight. Like young Lapwings, at the approach of danger they crouch close to the earth, where the harmony of their colour with that of surrounding vegetation effectually conceals them. At this time the parent birds become much more venturesome, and lose much of their habitual wariness. They often fly round and round your head calling wildly, or run along the ground with wings half spread, or stand quite motionless on a little hillock carefully watching your every movement.

So soon as the autumnal tints creep over the moorlands, when the heather flowers are beginning to fade, and the Ring Ouzels take their departure for a southern haunt, the Curlews gather into little parties and repair to the coasts. Now the Curlew becomes a gregarious species indeed, and not only keeps company with its own kind, but mixes with the vast hordes of wild-fowl which haunt the coast during autumn and winter. The Curlew at this season is more shy and wild than ever. He is indeed the sentinel of the coast, ever on the alert, his loud *curlee-curlee* as he launches into the air giving the alarm to the other wild-fowl feeding near, and putting every bird within hearing on the look-out. As soon as the receding waters leave the mud-banks exposed, the Curlews repair to them to feed. At high water they usually visit the meadows and open lands near the ocean, preferring, if a choice is obtainable, the marshy grounds. On the coast they usually feed near the tide, following each receding wave, and occasionally wading some distance into the water. If

disturbed they often run forward with expanded wings for a few yards, then rise into the air and fly away, the flock usually assuming the form of a wedge. Perhaps they go for half a mile or more across the sea, or settle on some low muddy island. The low-lying coast of Lincolnshire between Skegness and the Wash is a favourite haunt of these birds, and their wild notes are the commonest we hear sounding over the seemingly interminable wastes of sand and mud. The Curlew in smaller numbers also frequents the rocky coasts if the beach is uncovered at low water. I have seen them pretty numerous near the little fishing village of Flamborough, during the time of high water frequenting the neighbouring pastures, where a few Whimbrels might generally be seen in their company. At night time too the Curlews are particularly lively birds, and I often listen to their wild mournful note, now loud and shrill, anon faint and musical, when they are my only company. To a stranger this note would sound alarming indeed, and I can well understand the Highlander's dislike to these birds—an antipathy so great as to cause him to remember the Curlew in his prayers, and seek expressly to be saved from “all lang-nebbit things.” Yet the man must have no poetry in his soul who cannot listen to the wail of the Curlew with feelings of delight, be it heard on the lonely moor at dusk, or on the tide-washed flats when the moon is tipping the crests of the waves with silver sheen, and the night wind brings it from all quarters of the sky.

The food of the Curlew differs slightly, according to the haunt which the birds frequent. In summer on the moorlands insects and worms are the bird's chief food, together with snails, much as is the case with the Snipe—its long beak being used to probe into the soft soil of the bogs and marshes and sands. I have known the Curlew feed at this season on ground fruits and the tender shoots of herbage. On the

coast in winter its diet is varied with small crabs, mollusks, sand-worms, and insects. It is now exceedingly fat, and is held in high estimation for the table.

Very similar to the Curlew, both in its habits and appearance, the Whimbrel (*Numenius phaeopus*) is a much rarer and more local bird. It is characterised by its smaller size, and the top of the head is dark brown, in strong contrast to the pale eye-stripes and mesial line. It is most numerous in spring and autumn, when great numbers pass along our coasts to and from the north; but a few remain behind all winter on the mudflats—probably the birds that have bred on the Scottish moors. In its food, habits, notes, and economy generally, it does not differ much from the Curlew. In summer I have seen small bunches of these birds feeding on the shore, and noticed that at all times they are not quite so shy as their larger congener. The Whimbrel breeds on the moors near the sea. Its nest is a little hollow under a bush or grass tuft, neatly lined with dry grass, and the eggs are four in number. They resemble those of the Curlew in almost every respect, but are smaller. Whimbrels migrate in large flocks, and I have often seen them on the salt-marshes and pastures near the sea in company with Curlews and sometimes with Knots.

THE COMMON TERN AND ARCTIC TERN

(*Sterna hirundo* and *S. arctica*)

IN spite of the dissimilarity of their appearance, the Terns and Gulls are closely related to the Plovers and Sandpipers, being probably the most highly specialised forms of the great natural group which comprises the Plovers, the Auks, the Petrels, the Cranes, the Bustards, and the Rails. The Terns rank among the most graceful of birds, and are indeed charming ornaments to the wild shore and the restless sea. They not only frequent the coast, but may often be met with considerable distances inland, and some species even prefer the marshes to the shore. The Common Tern is by no means so abundant or so widely distributed as its name seems to imply. It is a bird of passage to this country, arriving late in spring, and departing southwards in autumn to the seas round sultry Africa. If the weather is fine and the season a moderately early one, the Common Tern arrives at its usual summer haunts by the end of April, but in backward years not until early May. In most places where the shore is suited to its needs the Common Tern may be found. It loves the various groups of low islands and ocean rocks that occur so frequently round our northern coasts, and it never makes its colony on the mainland if an island can be had instead. Terns are birds of the air and justly deserve their name of "sea swallows." Upon the ground they are awkward, and they seldom attempt to walk, because, like the Swallows,

their tarsus is very short; but they often alight on the sea, where they swim very buoyantly. Sometimes a flock of Common Terns settle on a rock some distance from shore, and they almost invariably choose an island of some sort on which to sleep at night.

The wild seashore can offer few prettier sights than a flock of these charming little birds busy in search of food. Very often they feed close inshore, especially where the beach is rocky and the water moderately deep. A shoal of fry is moving slowly along at the surface of the water; you may see the dark mass from shore, as the millions of tiny fish gambol and swim about, and you may trace the movements of the shoal by the actions of the Terns. In slow graceful flight they hover above the fry, and first one and then another drop down into the water, just like Gannets, and secure a fish, sitting on the surface until they have swallowed it. Sometimes they dart rapidly down, and, fluttering over the sea with legs and feet extended, seize a fish floating near the surface; and birds are constantly alighting on the water to rest a moment or preen their beautiful plumage. The flight of this Tern is exceedingly graceful, slow and regular, but often full of rapid twists and aerial gambols, especially when two birds buffet or toy with each other in mid-air. For miles these beautiful little birds follow the shoals of fish, and they often make their appearance amongst the fleet of fishing boats, feeding on the small fish which are thrown away when the nets are drawn.

Terns are not very noisy birds, except at their breeding-places. When fishing you may hear them utter an occasional *krick* or *kree-ick*, but they seem too intent on their labours to converse. The food of the Common Tern is principally composed of small fish, especially fry. I have known them catch sand eels, and now and then an insect or a crustacean is secured, especially as the birds sit or rather lie on the beach

or rocks. They feed greedily, and often retire to some safe place to rest and digest their meal.

The Common Tern is perhaps the most interesting at its breeding-place. It gathers into colonies for this purpose, and some of these are very large, consisting of thousands of birds. I have visited many nesting-places of the Common Tern on low rocks and small uninhabited islets, and less frequently taken its eggs from the secluded beach of the mainland; but undoubtedly the most interesting colony is on the Ferne Islands—that grand “Hotel de ville” of British sea-fowl. How can words be found to paint the bewitching scene? What pen can reproduce on paper the life and animation of a colony of Terns? As their island home is approached, the noise of the oars in the rowlocks startle numbers of Terns from the beach or the little rock pools where they were swimming quietly about. These fairy-like sentinels approach and flutter restlessly above us; and as we land Terns may be seen rising in dozens and scores from all parts of the island. The scene now becomes excitingly beautiful—a snowstorm on this bright midsummer day, when the sun is beating fiercely down from a dark blue and cloudless sky. The air is densely thronged with fluttering birds, and their loud wild screams increase the impressiveness of the scene. Here and there, amongst the luxuriant growth of sea-campion, the birds have made their nests, but these are only the suburbs of the grand Tern metropolis. Near the centre of the island the vegetation is absent, and a bare patch of shingly ground extends for some distance. This bare ground is so thickly strewn with eggs that it is almost impossible to walk about without breaking them. Everywhere the eye may chance to wander it discovers a Tern’s nest. These are little more than hollows in the ground, lined with a few bits of dry grass and withered stalks of the sea-campion. On approaching this city of Tern’s nests the birds become more clamorous, and some of the most

venturesome birds swoop closely round our head. The excitement and noise is kept up until we finally reach the shore again and push off to sea; but long afterwards we can observe the troubled birds hovering above their nests, and their cries come gently down the wind. Sometimes the nests are made near the water's edge; and I have occasionally seen the eggs lying on the bare rocks with only a few bits of grass and withered seaweed round them. I am of opinion that the Common Tern usually makes a nest, and breeds much farther from the beach than the Arctic Tern generally does.

The eggs of the Common Tern are two or three in number, and vary from buff to grayish-brown in ground colour, spotted and blotched with dark brown and pale gray. They vary considerably in size and markings. Some eggs are very handsomely blotched; others are only sparingly marked, and very often the spots form a zone round the larger end. The Common Tern only rears one brood in the season, and both parents assist in bringing up the young, which are covered with down and able to run and swim shortly after they are hatched. The young are fed on shrimps and various small marine animals; as they get older they take to small fish, which the old birds are most assiduous in catching for them. In autumn, when the young are strong upon the wing, the Common Tern unites into enormous flocks, which gradually wander southwards to warmer seas, flying leisurely along, often staying a few days here and there where food chances to be plentiful.

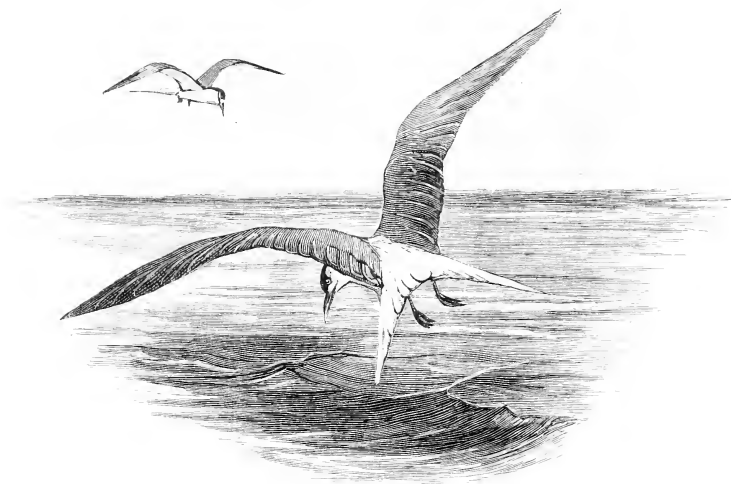
The Arctic Tern is by far the commonest of its family in this country, and is very widely dispersed, especially in the more northern districts. Like its congener, the Common Tern, it arrives here late in April or early in May, and frequents much the same localities. It is just as gregarious, perhaps more so than its congener, and its slenderer form and proportionately longer wings and tail make it even more elegant

looking when in the air. You may often watch this charming little bird fishing along the shore, perhaps a hundred yards from the beach. It catches its food by pouncing down like a Gannet, or sometimes when fluttering above the restless waves. I have seen a party of these birds fishing along the shores of a quiet northern loch, when the fall of their bodies in the still water could be heard half a mile away. None of the Terns ever dive for food—they are too light and buoyant to do so, and have to swoop down from a considerable height to give themselves sufficient impetus to sink even a little way under the surface, where they seize their finny prey. I once saw a party of these birds clustered thickly over the timbers of an old wreck, from which they repeatedly started to catch the passing fish. The food of this pretty little bird does not differ from that of its congener above treated with ; but I think it shows more preference for crustaceans.

The breeding season of the Arctic Tern begins in June. The sun has then attained considerable power, and its rays largely assist in hatching the eggs of this and other species of Tern. The Arctic Tern breeds in colonies, some of them very large and covering acres of ground, but others are small and only consist of a dozen pairs or so. I have taken its eggs in many situations, especially on the rocky islands in the northern lochs and amongst the wild Hebrides. In some parts of this latter group of islands almost every little islet contains a colony. The Ferne Islands, too, are a great breeding-place of the Arctic Tern. To my observation this bird lays its eggs much nearer to the water than the other Terns ; and how some of them escape being washed away is always a mystery to me. At these latter islands I have seen the eggs within a few inches of the water, and laid on drifted seaweed just above the tide-mark. I also observed here that the birds often change the locality of their colony year by year, breeding in certain chosen spots in succession. The

Arctic Tern differs from the Common Tern in its nesting economy, inasmuch that it never makes a nest. The eggs are laid on the bare beach, sometimes where a little sand has collected between the stones, or on drifted seaweed, or amongst the shingle above high-water mark. They are two or three in number, a little smaller than those of the preceding species, and rather more green in general appearance. They are much more elongated than those of the Common Tern. During the hot days the birds do not sit much on their eggs, but there are always plenty of birds at home ready to rise screaming in the air if their colony is invaded. Many eggs are laid close together; in some cases they so thickly cover the ground that it is impossible to walk without breaking them. The eggs of both these Terns are most protectively coloured, and harmonise very closely with surrounding objects.

The Arctic Tern is a bird of summer, and wanders southwards with the sun. Flock after flock slowly wend their way to warmer seas at autumn's approach. They migrate slowly, and often stay a day or two in places where food is abundant, attending the fishing fleets, or entering bays and creeks in their southern progress.



THE SANDWICH TERN AND LESSER TERN

(*Sterna cantiaea* and *S. minuta*)

THE beautiful Sandwich Tern is the largest of its order that visits our islands regularly in early summer. Its haunts are few and far between, and, sad to say, the bird has disappeared for ever from many localities where it used formerly to breed in abundance. In this country now its grand headquarters are at the Ferne Islands, and there we will stray to observe the habits of this interesting species. Like all its congeners it is a migrant, and arrives here from the African coasts by the end of April, although its breeding season does not begin before the end of May or early in June. It is a very gregarious bird, and not only associates with its own kind, but with most other Terns. When disturbed, the big Sandwich Terns look very conspicuous amongst their smaller congeners.

At the Ferne Islands the birds are very regular in their appearance, and upon their first arrival they only stay near the islands an hour or so each morning, until the serious business of the year commences. In this respect they put the observer very much in mind of Rooks. Unfortunately the Sandwich Tern has become much scarcer at its old familiar breeding-places — its eggs have been wantonly gathered in wholesale numbers by every tourist and sight-seer, and in some years its colony has been entirely destroyed by high tides. Notwithstanding these misfortunes there is still a very important colony of Sandwich Terns at the islands, and every lover of bird-life will join in the desire of seeing them increase and prosper. Upon my last visit to the Ferne Islands the birds had just lost all their eggs by a high tide, and the pretty shells strewed the beach in great numbers. The poor birds were disconsolately flying over the ruins, and displayed very little anxiety at my presence. Some of the more enterprising birds, however, had commenced laying again on a distant part of the island, and a little branch colony was established on the neighbouring islet.

On a previous visit, however, I was much more fortunate, and had ample opportunities of observing this graceful bird's nesting economy. As we rowed to the grassy island on which the colony of birds had established themselves, the Arctic Terns were the first to take wing. We passed a colony of this bird on the beach and wandered towards the centre of the island, where the Sandwich Terns were sailing anxiously about the air uttering their loud shrill screams. This time they had laid their eggs much farther from the shore, on the summit of a little bare plateau. On our way to the main colony we passed numbers of nests in the short grass and sea-campion, but the great centre of attraction was the bare patch of ground, on which there must have been hundreds and hundreds of nests, some of them not being more

than a foot apart. Long before we got to this oological El Dorado every bird had taken wing, and the entire colony was sailing and fluttering and screaming high in air above our heads. Very white they looked against the dark blue sky, and their black head-caps showed conspicuously against their gray upper plumage. Many birds hovered like Kestrels just above our heads, and now and then several would swoop almost to the ground and rise again as suddenly. The whole time we lingered near this fascinating spot, the birds kept in motion, nor did they finally settle down till long after we had left their island home.

The Sandwich Tern makes very little nest—merely a hollow in which a few bits of withered herbage and dry seaweed are collected; and in some cases nests are entirely dispensed with, when the eggs are laid on the shingly beach. The eggs very closely resemble the ground on which they lie. They are two or three in number, and vary considerably in shape and coloration. Eggs of this Tern rank amongst the most beautiful objects a well-filled egg cabinet can display. They vary in ground colour from white to buff, spotted and blotched with dark brown and violet-gray. Many eggs are very boldly marked indeed, the entire colouring matter being collected in one or two large splashes. Others are spotted evenly over the entire surface, and some are streaked and clouded with colour in a most remarkable manner. I know of no other eggs which are more handsomely marked than those of the Sandwich Tern. But one brood is reared in the year, although, if the first lot of eggs is destroyed, others are invariably laid after the lapse of a week or so. Both birds assist in hatching the eggs.

The Sandwich Tern does not wander far from home during the breeding season, and obtains most of its food from the water in the immediate neighbourhood of its nest. It obtains its food when flying over the sea, dropping down into the

water upon the small fish that swim near the surface. The food of this bird is largely composed of fish, and this fare is varied with crustaceans and other small marine animals. From observation I am able to state that the young are fed largely on sand lice, and even on beetles. In autumn this fine Tern congregates into large flocks, and young and old wing their way southwards to seas bathed in perpetual summer.

As the Sandwich Tern is the largest, so is the Lesser Tern the smallest of the Terns that come regularly to this country in spring to breed. This delicate little bird cannot be said to be anywhere very common, and its breeding-places are local. Probably, before the railway joined the busy centres of industry with the quiet fishing-villages, the Lesser Tern was an abundant species, and bred on most parts of the coast suited to its needs—now, alas! it has become one of the rarest of our sea-birds. I know of no place along the hundreds of miles of British coast-line where this bird is common, or where an extensive colony may be found—and, curiously enough, it is not known to breed on the famous Ferne Islands. I have seen it flying gracefully above the sea, close inshore, in pairs and little scattered parties. Its habits are very similar to those of the other Terns, but it prefers low-lying sandy shores to rocky ones, and the mainland rather than islands. This latter peculiarity is most probably the cause of its rarity, for if it nested on islands there can be little doubt that it would be much more abundant. It is a thorough bird of the air—almost incessantly on the wing, save when it seeks the sands to sleep, or the water to rest and wash itself. It flies along the coast in a slow fluttering way, ever and anon falling like a stone to the water to pick up some tiny fish. The Lesser Tern arrives late in this country, seldom making its appearance before the middle of May; and it leaves early in autumn for its winter home along the coasts of Africa. Its

note is very similar to that of the other Terns, but not quite so loud, and is uttered most vociferously when its breeding grounds are invaded. The Lesser Tern feeds on small fish and crustaceans, sand lice, and not a few insects.

In the month of June, when the sun beats fiercely down on the sandy shores, the Lesser Tern begins domestic duties. Regularly every year it appears on the same favourite bit of coast. It breeds in small colonies, and on the broad expanse of beach its eggs are extremely difficult to find. By the actions of the birds, fluttering high in air above, you may know their eggs are on the shore around you, but the only way to obtain them is by a close and systematic search. I have observed that the Lesser Tern prefers those portions of the low beach where the smooth fine sand is varied here and there with bits of rougher ground strewn with pebbles, broken shells, and the various rubbish that accumulates on the shore. It is no use searching the fine sand where the Ringed Plovers nest for the eggs of the Lesser Tern; but if you confine your attention to those bits of rougher beach your perseverance will soon be rewarded. The Lesser Tern has an object in laying its eggs on the rough broken ground, for it is there they harmonise most closely with surrounding objects. If laid on the smooth sand, their big blotches of colour would make them most conspicuous, and they would be seen at once. The Lesser Tern makes no nest—in many cases not so much as scraping a hollow in the beach. She lays her eggs on the bare ground, and during the hot hours of day rarely sits upon them—the sun furnishing sufficient heat for the purpose. It has been said that this bird never lays more than three eggs in a clutch, but I have taken four on two separate occasions in a small colony of these birds on the Lincolnshire coast. The eggs are precisely the same in colour as those of the Common Tern, but are as a rule more boldly blotched and spotted. They are of course only about

half the size, and cannot easily be confused with those of any other British bird. When the nesting-place is visited by man the little birds become very anxious and fly hurriedly about, uttering their loud creaking-note at intervals. Only one brood is reared in the season, and almost as soon as the young can fly the great southern journey begins.

THE BLACK-HEADED GULL

(*Larus ridibundus*)

WE generally associate the Gull with the coast—with the wide waste of waters, the lonely shore, the rocks and the mudflats; but in the Black-headed Gull we have a bird of the inland districts. In many of its habits the Black-headed Gull resembles the Rook. Like that species it may be seen following the plough, or searching the grass lands for food. In spring and summer this Gull lives in colonies of varying size, and for miles and miles around them the birds are familiar objects of the landscape, scattering themselves up and down the country in search of food. They fly in little parties to the newly-sown lands; they visit the meadows, and follow the course of rivers for miles; and are as much at home in the fields as the black Rooks themselves, which often mingle with them. I have watched these birds follow the plough, furrow after furrow, running behind close to the ploughman's heels, tamer than Rooks, searching amongst the rich brown earth as the bright share turns it over, and feeding on the worms and grubs it is for ever exposing. They are very conspicuous birds on the green pastures and brown fallows; and sometimes they may be seen to fly up into the tall trees in the hedges and sit there with as little concern as the Rooks and Starlings.

In autumn, after the young are safely reared, this bird deserts the inland fields and marshes and seeks the coast, especially those portions which are low and muddy; and here

it may often be seen in thousands settling on the mudflats, or following the shoals of fish for miles across the sea. It naturally follows that a bird like the Black-headed Gull subsists upon a somewhat varied diet. During spring and summer it feeds on much the same substances as the Rook—grubs, insects, worms, and especially wire-worms, frogs, and even newly-sown grain, as well as fresh-water fish; but in winter, when it lives almost exclusively at sea, its food is fish, crustaceans, and various other small animals of the deep. Unlike the Terns, it feeds on shore as well as at sea, and picks up much of its food when swimming on the surface as well as when fluttering in the air. In winter it often follows ships, and frequents harbours and tidal rivers to pick up any scraps that may chance to be thrown overboard, or are floating on the surface. There can be no doubt that this interesting little Gull is of great service to the agriculturist, and its visits to the land should be encouraged. It has no mischievous habits, nor does it return in harvest to levy a tribute for its good offices in seed-time. No more harmless bird cleaves the air, yet how often is it ruthlessly shot down by the stupid farmer in very wantonness!

The Black-headed Gull is an early breeder. In the boisterous month of March it begins to acquire its sooty-brown hood, which is the most distinctive feature of its wedding garments, and by the beginning of April the usual breeding-places are crowded with birds. By the middle of the month the nests are made and many of the eggs deposited. Unfortunately for the Black-headed Gull, the drainage and reclamation of marshes and mosses have robbed it of many quiet breeding-places, where it has reared its young in undisturbed possession for ages. In the low-lying counties there are several places left, but in the north its colonies are much more numerous, though they cannot well be more interesting. A visit to one of these famous "Gulleries" is a red-letter day in

the life of a naturalist, and no matter how often his visits may be repeated the interest never wanes, nor does the busy scene lose any of its charm. The Black-headed Gull generally selects a marshy part of a moor, or a low island in the centre of a pool, for its breeding-place. Trees are by no means shunned by this pretty bird, and many of its breeding-places are thickly studded with low willow bushes and dwarf birches. I know of districts where this bird breeds in considerable numbers, which are surrounded by plantations; and in one locality these trees have even been built in by one or two pairs of birds. Where the ground is clothed with long coarse grass, tufts of rushes, and low bushes and brushwood, there the Gulls love to make their nests. As soon as the colony is invaded, the frightened birds rise up from all parts of the soft elastic ground, and, in a dense fluttering throng, fly and hover, and turn and twist, in endless gyrations above their nests, chattering loudly all the time. Numbers of birds settle on the distant water; others alight on the low stumps and bushes. As soon as we leave one part of the ground the birds settle again; but the least unusual movement on our part sends them fluttering into the air, and the noisy tumult is renewed with increasing clamour, anxiety, and excitement. You may now observe this Gull's powers of flight to perfection. Its usual mode of progress is by slow and regular beats of its long wings, an interval between each stroke; but it is able to turn and hover with considerable grace, and often swoops obliquely down to within a few feet of the ground, then mounts buoyantly up again. Many birds may be seen sailing round and round at an immense height; and others often sweep along just above the water, picking up a scrap of food as they go. If this bird is comparatively silent in the fields, it is most noisy at the nest, and the babel of sounds is deafening, each bird uttering cries of remonstrance in many modulated tones. I have known quite a party of these birds

follow me for some distance from their breeding-place, all the time calling loudly. When the young are hatched the scene is even more animated, and the anxiety and excitement are immensely increased.

The nest of the Black-headed Gull varies a good deal in size. In some cases it is little more than a hollow in the ground; but in others it is a well-formed structure of reeds and rushes and coarse grass, banked high above the surrounding marsh. Many nests are made in the centre of the rush tufts, or in clumps of coarse grass, and I have even known them built amongst the reeds in the shallow water, where they very closely resembled the nest of a Moorhen or a Coot. The eggs are three or four in number, and present great diversity of colour, size, and shape. They vary in ground colour from rich brown to pale bluish-green, spotted and blotched with dark brown and violet-gray. On some eggs the markings take the form of streaks; and on many most of the spots and blotches form an irregular zone round the larger end. Very eccentric-looking eggs may often be found, with the colouring matter in a dense circular patch at the large end, gradually tinting off into the ground colour, or with only one or two enormous patches of colour here and there, and the remainder of the shell quite free from markings. Vast numbers of the eggs of this Gull are taken for food—in some places the birds being a valuable source of income to the owner of the property on which they have formed their busy colony. Crop after crop of eggs is gathered, the foolish Gulls laying a second or even a third clutch. They must indeed be strongly attached to their breeding grounds to thus submit to such systematic robbery; but if they are allowed to rear the second or third lot of eggs they seem satisfied, and unerringly return the following season to their old haunt. The Black-headed Gull only rears one brood in the season, and as soon as the young can fly the

birds collect into enormous companies and seek the distant coasts.

The Black-headed Gull now becomes a nomad, and wanders far and wide in quest of food, visiting coasts which it never frequents in spring and summer ; and sometimes flying long distances from land to attend the fishermen in their labours. This bird flies a good deal at night, and I have known numbers to be taken in the flight-nets both in winter and during the late autumn months. Severe weather sometimes drives this Gull to inland districts, especially up the large rivers, even to the centre of our busy Metropolis. It is ever wary at this season though, and generally flies high and keeps well out of danger.

THE COMMON GULL

(*Larus canus*)

THE Common Gull scarcely deserves its name, for it is certainly the rarest and most local of all the resident British species, and its habits during the breeding season can only be observed in the north. I have never met with this bird common anywhere, and its colonies with which I am acquainted are comparatively small.

In many of its habits the Common Gull very closely resembles the Black-headed Gull. Like that bird, it may often be seen on the inland pastures miles from the breeding-place, following the plough. It may be readily distinguished from its smaller congener by the absence of the brown hood, and by its yellowish-green bill, legs, and feet, which in the Black-headed Gull are dark red. It runs about the rough land picking up grubs and worms, or stands on the big lumps of earth, and if frightened sometimes takes refuge in the nearest tree. I have often met with this bird on the higher moors, miles away from the sea, where the Dunlins breed, or flying over the deep clear tarns and lochs. It often follows the course of a loch or a long narrow arm of the sea for miles and miles up the country, and seems always to prefer the land-locked waters to the open sea. I remember on one occasion to have watched a large party of these birds fishing along the shores of Loch Carron. The waves were lashing along shore, and driving with fury before a stiff northerly

breeze, and showers of snow and sleet were falling at intervals. Among the storm and the angry waters the Common Gulls were busy, flying up and down a few yards above the waves, and every now and then dropping to catch a fish or pick some floating substance from the sea. They did not go far out from shore, and ever and anon a few birds would settle down upon the water, where they were almost invisible among the foam-crested waves. The flight of the Common Gull is slow and deliberate, performed with regular beats of the long wings; but the bird has considerable command over itself, and can turn and twist and hover with much gracefulness. I have also seen it fly in the teeth of the gale, and mount up high in air to swoop down wind with amazing quickness.

The food of the Common Gull is composed of insects, worms, grubs, frogs, and fish. The bird may sometimes be seen searching among the rocks and heaps of drifted seaweed at low water, and it picks up any floating garbage from the sea. I have known it follow in the wake of a fishing smack for miles, picking up anything eatable that by chance was thrown overboard. It is by no means a shy bird at sea, but on land it rarely ventures within gunshot, unless at its breeding colony. After its appetite is satisfied, the Common Gull seeks some quiet ocean rock or low island, where it preens its feathers and sleeps. This bird flies much at night, especially in autumn and winter; but during summer it is rarely on the wing during the few short hours of darkness.

The Common Gull collects at its breeding-places late in April, but the eggs are not laid until the middle of May. You may find its nest in many different localities. Sometimes a small island in a mountain lake is used; and I have taken its eggs from the low cliffs and the flat tops of rock-stacks, as well as on the quiet parts of the shore far from man's habitation. But the most extensive colonies, so far as my observations extend, are established on rocky islands in the

deep sea-water lochs. In some places almost every island contains a few nests, and on the larger ones the colonies of birds become more extensive. In most cases, however, the nests are scattered up and down a considerable extent of ground. One of the largest colonies of these birds I ever visited was established on a rather low island which sloped up from a sandy beach and fell down in many parts in small cliffs to the sea. It was covered with long grass and patches of heath, and where the turf was shortest big masses of rugged rock were exposed, and in some places the ground for many square yards was composed of the flat top of a piece of rock. Here and there were several rocky hillocks covered with turf, sloping on one side, falling down in steep rugged descents on the other. The Common Gulls were to be seen standing on these rocks and little eminences long before we landed, and a few birds kept rising from and dropping into the herbage again, or hovering some distance in the air, as if watching our approach. As soon as we landed and crossed the bit of sandy beach the birds began to rise. From all parts of the island fluttering Gulls rose from the tall herbage and the exposed rocks, and soon the air was full of them, all uttering their harsh note of *yak-yak-yak* most persistently. I found their nests in various situations. Some were built in a crevice of the bare rocks, others were deep amongst the tall grass and heath; many were made in shallow hollows in the bare turf, and one nest was built in the little cliff overlooking the sea. The nests varied a good deal in size, those in the most exposed situations being the smallest—indeed, some of these latter were little more than depressions in the ground. They were made of heather branches, turf, dry grass, and bits of seaweed, and some were lined with grass almost fresh and green. Most of the nests contained eggs, but some were evidently only just finished and empty. The eggs are three or four in number, various shades of olive-brown in ground

colour, spotted and often streaked with dark-brown and gray. We might have gathered many baskets full of eggs from this interesting island, but we were content with a few. Some of the Gulls whose nests we lingered near came very close, almost within arm's length, and many birds followed us far out from shore when we left them to the undisturbed possession of their wild home.

When the young are safely reared the Common Gulls quit their breeding-places and wander far and wide in quest of food. They may now be observed hundreds of miles away from their summer quarters, following the shoals of fish, and flying up the wide mouths and estuaries of southern rivers. They now live almost exclusively on fish, rarely visit land to feed, and are very fond of entering bays and harbours.

THE KITTIWAKE

(*Larus tridactylus*)

THE Kittiwake is a thorough bird of the rocks. There is scarcely a sea-cliff of any magnitude rearing its lofty sides out of the deep green water that does not contain the nest of this charming little Gull. It is the life and animation of the rocks. The Guillemots may sit in solemn endless rows on every ledge and shelf, the Razorbills may tenant each nook and cranny of the cliffs, but the scene is a silent one so far as they are concerned. On the lower ledges and projections the Kittiwakes breed, and their noisy clamour is incessantly sounding from the dizzy depths. High above the roar of the waters, as they dash against the solid walls of cliff, the Kittiwake's unmistakable cry is heard, sounding like *get-away-ah-get-away*, and the birds may be seen clustering on the rocks far down the awful depths, only a few feet above the restless waves. The Kittiwake never leaves the sea. It rears its young on these stupendous boundary walls of the vast ocean, and when domestic duties are over it leaves the rocks and wanders far and wide over the wild and lonely watery wastes.

At all seasons of the year the Kittiwake is a gregarious bird. Summer and winter alike it may be seen in flocks of varying size, often great distances from land. In calm weather the Kittiwake stays out at sea for weeks together, attending the fishing smacks or the shoals of sprats, resting

when tired on the heaving waves, where it often sleeps as safely as on land. There is something indescribably beautiful about a sleeping Gull at sea. How its shining gray and white body rides buoyantly on the billows, now deep down in the hollows, then high up on the curling, foaming crests! What confidence the little bird must have in its powers of swimming even in the roughest water, to trust itself to sleep on the ever-tossing surface! The Kittiwake flies most lightly and buoyantly—rather slowly it is true, but with wonderful power and command over itself. I have seen this pretty little Gull beat to windward in a gale which I have had the greatest difficulty in breasting, and watched it turn and twist, or glide obliquely down to the water's edge with wonderful dexterity and speed. As its food consists principally of fish, the Kittiwake spends most of its time in search of them, flying lightly along a little distance above the water and pouncing down every now and then when it sees its prey below. The shoals of fish are followed by the hungry Kittiwakes, and never allowed a moment's peace until each bird's appetite is satisfied. The Kittiwake also frequently follows ships to feed on any refuse thrown from them; and it often takes crustaceans and other marine creatures from the water. I do not think that this bird feeds much on shore, although you may sometimes see it on the mudflats. Still it rests but seldom on the beaches and rocks, and when doing so appears never to engage in search for food. Few birds are gifted with keener powers of sight, and the moment anything is thrown overboard several birds are sure to visit it, even if they were previously flying a great distance away.

The Kittiwake breeds in enormous colonies on most of our sea-cliffs, and from what I have observed of this bird's economy I pronounce it to be a life-paired species. Every year the same nests are tenanted, provided of course that the wintery storms and the nine months' incessant buffeting of

spray and tempest have left them intact. In studying the nesting economy of this Gull you will find that it breeds, as a rule, much lower down the cliffs than the Guillemot and the Razorbill. Clusters of its nests may be seen within thirty feet of the waves. It is no use looking for the Kittiwake's nest on low and broken rocks; it chooses the most inaccessible portions of the high cliffs that tower almost like a wall from the sea. In places where the rocks do not furnish ledges and crannies enough for the Guillemots and Razorbills, the Kittiwakes make their nests on almost every part, but by far the most thickly on the lower portions. It is only the most daring climber who can take the eggs of this bird, for rarely indeed are they laid in situations easy of access. The nests are built on the narrow ledges and projections of the rock. A favourite site is where a piece of cliff has been broken off, leaving a shelving ledge perhaps only a foot across. Every little bit of vantage ground is used if the colony be large, and many nests are built close together. The Kittiwake's nest is a large well-made structure, adapted in every way to withstand the knocking about it receives from the wind and spray. In the first place turf and roots are used, the soil adhering to them soon becoming saturated with spray, and beaten into a mortar-like mass by the incessant pattering of the bird's webbed feet. Upon this solid foundation the Kittiwake builds a further nest of seaweed and stalks of marine plants, lining it with dry grass. A few feathers may sometimes be seen in the nest, but their presence is due more to accident than design. The droppings of the birds are strewn all round the nest and over the rocks, making the place look as if it had been whitewashed. The eggs are three or four in number, and differ considerably in colour, shape, and size. Some eggs are pale bluish-green in ground colour, others are olive-brown or yellowish-brown; the spots and blotches are dark brown and gray. Many eggs have

most of the spots in a zone round the larger end, others are boldly splashed with colour over their entire surface, and less frequently the markings take the form of streaks.

As soon as their rocky fastnesses are approached, the Kittiwakes set up a noisy chorus of remonstrance. Bird after bird flutters lightly into the air from all parts of the cliffs; numbers may be seen still sitting restlessly upon their nests; others are standing on the rocks, whilst many are flitting to and fro along the face of the cliff. It is a most impressive scene, and one not likely to be forgotten. To my mind the incessant noisy clamour of the birds adds largely to the wild beauty of the picture. Their notes speak eloquently of freedom—there is an independence about them quite in harmony with the rushing sea and the rugged rocks. Like hardy mountaineers these pretty Gulls cling to their favourite cliffs, bidding defiance to all but winged enemies or the most venturesome of climbers.

I have seen numbers of Kittiwakes' colonies, and visited their nests in many beetling cliffs, but the colony—or rather the succession of colonies at St. Kilda are by far the most interesting. In all suitable places round the cliffs of these rugged isles the Kittiwake rears its young, and here, as everywhere else, it reserves the most terrible parts of the rocks for its cradle—many nests being in places where the precipices overhang considerably. There the birds stand and seem to call defiantly and mockingly to the boat that ventures as near the terrible wall of rock as it dare, without being dashed to pieces by those stupendous waves which have not encountered land since they left the New World in their two thousand-mile race across the wide Atlantic.

As soon as the Kittiwake's young can leave the nest, the rocks are almost deserted. Both parents assist in tending the young, and when once they can fly the noisy birds wander

off to sea, to follow the shoals of fish. They now stray far from their rocky haunts, which are deserted till the following spring. The Kittiwake, I might just here remark, is readily distinguished from all the other British Gulls by its small size and absence of the hind toe.

THE HERRING GULL

(*Larus argentatus*)

OF all the Gulls that frequent the British seas the Herring Gull is perhaps the best known. There is scarcely a bay, a harbour, or an estuary that is not visited more or less frequently by this bold handsome bird—readily distinguished from all his companions by his large size and pale gray mantle. The Herring Gull may be seen on many a wide river near the sea flying unconcernedly about among the shipping, or even in the busy docks, where it skims lightly over the water and picks up any refuse that may be thrown from the vessels. Its haunts, however, are by no means confined to the shore. According to season, you may observe this big Gull on the pastures and the fallows, following the plough, or in the fields in seed-time, and the stubbles after harvest.

In many of its habits the Herring Gull is apt to remind you of the Raven. Like that sable thief, the Herring Gull seldom fails to visit carrion of all kinds lying in the fields or near the shore. I have watched a flock of these birds assist the Hooded Crows and Ravens in pulling a drowned sheep to pieces; and they may be seen repeatedly hawking along the coast, or over the mudflats, in search of any garbage that has been washed ashore. There is little eatable that this bold freebooter will not try and carry off. Even the flight-nets are visited by this daring Gull, and the

poor captives torn to pieces before the fishermen can take them from the toils. As its name implies, the Herring Gull feeds largely on fish, and never fails to betray the whereabouts of the shoal to the anxious fishermen. On the beach and mudflats, where it walks about in a singularly graceful manner, it searches for any marine animals that may chance to be washed up by the tide or left in the little pools of water amongst the rocks, its strong powerful beak enabling it to tear and break most objects it may attack. Crabs, crustaceans, mussels, limpets, are all eaten by the Herring Gull; and it persistently attends the fishing smacks, to prey upon the refuse of all kinds thrown overboard. It may well be described as the Raven of the ocean—like that bird it is almost omnivorous. It is rather quarrelsome, and may often be seen fighting with its congeners over scraps of food, or even robbing the smaller Gulls and Terns of their hard-earned spoil.

Vast numbers of Herring Gulls frequent the mudflats on the low-lying coasts, mostly of young and immature birds. When on the beach they are shy and wary enough, and when flying from place to place over land they always keep well out of gunshot; but at sea they are often absurdly tame, and fly round and round a boat within a few feet of the observer's head. The Herring Gull flies slowly and rather laboriously, with regular beat of wing; but it is capable of performing many graceful evolutions in the air, and when flying with the wind often sweeps along at a great pace, riding, as it were, on the very wings of the storm. Both this and the other species of Gulls often soar to an immense height, wheeling round and round in circles. When fishing, the Herring Gull drops lightly down into the sea like a Tern. It swims well, sitting high and buoyant in the water, and is only driven to land by the roughest weather.

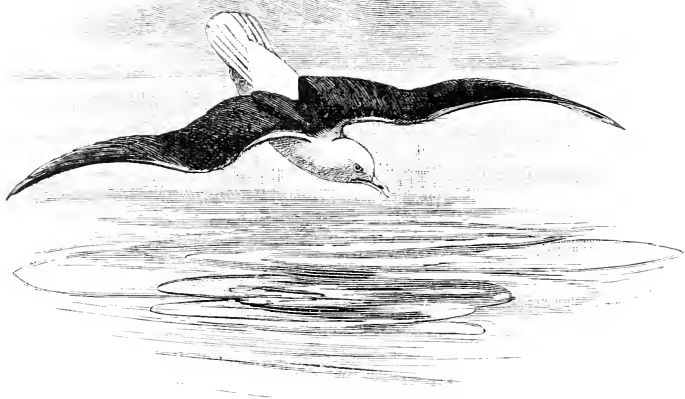
• The breeding season of the Herring Gull begins in May. The

bird does not collect into such enormous colonies as the Lesser Black-backed Gull, the Kittiwake, or the Black-headed Gull, but you generally come across a few nests here and there. It breeds on the lofty cliffs rising hundreds of feet out of a restless sea, as well as on the ground along the coast, in little frequented districts. Its favourite place, however, is on an island—either a low sandy one, or a precipitous ocean rock. A few pairs of Herring Gulls breed on the grassy slopes on the north side of the Bass, some distance inland from the top of the cliff; and I have taken its eggs from the flat summits of small stacks of rocks. In fine, the Herring Gull adapts itself so readily to circumstances that suitable breeding-places may be found almost anywhere along the coast; hence the birds are scattered over a vast extent, and have not to collect in large colonies in a few favoured localities. When on the cliffs the nest is usually a much more bulky structure than when built on the ground. It is made of turf, dry seaweed, stalks of marine herbage, and lined with grass. Some nests are hollows in the ground, simply lined with semi-dry grass; and I have occasionally seen the eggs lying almost on the bare ground. At the Bass the Herring Gulls are remarkably wary, and fly from their nests at the least alarm, as if conscious that their showy dress would only lead to the discovery of their treasures. I have frequently seen them run quickly for some distance from their nests before they took wing. At the Fernes many Herring Gulls nest on the low herbage-covered islands, mixing and fraternising with the Lesser Black-backed Gulls. When their nests are menaced by danger the Herring Gulls become exceedingly clamorous and anxious, flying hurriedly about, or swooping round the head of an intruder, all the time uttering their harsh chattering cries. When their nests are built on the cliffs they do not seem so anxious, and I have known them fly right away as soon as I disturbed them from their eggs.

Great numbers of Herring Gulls breed at St. Kilda, but here as elsewhere they are scattered up and down the cliffs, and do not seem to have any special choice of habitation. A few nests are made on the beetling rock-stacks, and many more on the grassy spaces of the cliffs. The natives of St. Kilda persecute this Gull with a deadly hatred. It is a great robber of eggs, and levies wholesale tribute on the Fulmars' nests. In some parts shepherds break the eggs of the Herring Gull at every opportunity, and everywhere it appears to be more or less disliked, owing to its various depredations.

The eggs of the Herring Gull are two or three in number, and rather larger than those of the Lesser Black-backed Gull. They vary from pale bluish-green to olive-brown and yellowish-brown, in ground colour, somewhat sparingly spotted with dark brown and gray. Only one brood is reared in the season, and as soon as the young can fly they appear to be deserted by their parents, and flock by themselves during the several years that elapse before they obtain their complete dress of maturity.

During the winter months the Herring Gull wanders far and wide, and often visits inland waters. Flocks of birds frequent almost every little fishing village along the coast, and they may often be met with far at sea. These birds may often be seen flying across country high in air from one coast to another. On these extended flights the birds are frequently attracted by lakes and large sheets of fresh water, which they sometimes linger near for days. A broad stubble or newly-ploughed or manured field will also tempt this Gull from the air in its winter wanderings.



THE LESSER BLACK-BACKED GULL

(*Larus fuscus*)

Two more species of Gull claim our notice before we bid these graceful sea-birds adieu. The first of these is the Lesser Black-backed Gull, a very common bird in many localities, and one that is specially interesting to the naturalist. By far the best time to observe the habits of this beautiful Gull is in May and June, when it is busy at its nesting colonies. Most famous of all its nurseries in the British Islands is the one on the Ferne Islands—that Eldorado of the ornithologist. Here the various species of sea-fowl have had their home for ages ; from all parts of the wide waste of waters they come in spring, and make these rocky isles their grand headquarters for the summer.

These celebrated islands lie about five miles from shore, and long before you land upon them signs of their rich bird treasures may be seen. The Terns in screaming crowds are

most numerous on one island, the Puffins live upon another, the "Pinnacles" are sacred to the Guillemots and the Kittiwakes; but on every island in the group the Lesser Black-backed Gull has established a colony. As you approach the islands the big Gulls may be seen thickly dotted up and down the green sward, or standing in scores on the low rocks and boulders. Gulls are everywhere. Wherever you may cast your eye it is sure to rest on one or two of these big birds standing all warily intent on watching the approach of the boat. Your landing is the signal for general confusion and consternation amongst the birds. One by one they take wing, and as you wander up from the shore Gulls rise on every side. Thousands of birds are soon in the air together, rising from all parts of the grass, the patches of sea-campion, and the rocky ridges, in a confused mass fluttering about like big animated snowflakes. Almost at every step you stumble across a Lesser Black-backed Gull's nest. They are everywhere—amongst the grass and marine herbage, in the crevices of the rocks, and on the bare peaty ground, sometimes in the hollows where the Puffin's burrows have fallen in. The anxious owners clamour loudly from the air above, and peer down upon you with troubled glances. As soon as you leave one part of the island those birds whose nests are free from intrusion soon settle down again, but at the least alarm they rise screaming into the air. You will never find them, however, go on to their nests until their breeding-place is finally deserted by man. As you visit island after island, the same strange stirring scenes are repeated—the clamorous Gulls rising and filling the air in a troubled seething throng. Gulls are also constantly arriving from the sea, no doubt having observed the unusual disturbance from afar, and hastening home to learn the cause.

The same behaviour may be noticed in the smaller colonies of this bird, established on the various rocky islands round

the coast. Considerable numbers of this fine bird breed on the stacks and cliffs of St. Kilda, some of them doing so amongst the colonies of Gannets and Fulmars. This bird is also hated by the St. Kildan, its proneness to carry off the eggs of the sacred Fulmar being in his eyes a capital offence. Colonies of this bird frequently establish themselves some distance from the open sea, on islands in quiet lochs and tarns.

The nest of the Lesser Black-backed Gull varies a good deal in size even in the same colony of birds. Usually it is rather a bulky structure, made of pieces of turf, branches of heather, and leaves and stalks of sea-campion, finally lined with grass. The nests are poorly made, very flat, and but little art is displayed in concealing them. Where a natural hollow in the ground has been selected, only a little dry grass is arranged by way of lining, and many nests in the crevices and crannies of the rocks are small, and very loosely and slovenly arranged. The eggs are three or four in number, and differ in colour in a most remarkable manner. Usually the eggs in a nest are pretty uniform in colour, but it is by no means uncommon to find one of quite a different type among the rest. In a heap of perhaps twenty thousand eggs lying before me, pale green, bluish-white, dark olive-brown, pale brown, buff, and gray constitute the ground colours, and the spots and blotches vary from dark liver-brown to pale brown and gray. Some eggs are streaked almost like those of a Bunting, others are finely marked over the entire surface; whilst others, yet again, are boldly blotched, or have most of the markings in a zone round the larger end. The eggs of this Gull can be confused with those of the Common Gull and the Herring Gull, but as a rule those of the former species are much smaller, whilst those of the latter are on an average considerably larger, and the markings take more the form of spots rather than blotches. The Lesser Black-

backed Gull only rears one brood in the year; but as its eggs, especially at the Ferne Islands, are systematically taken in enormous numbers for food, it does not succeed in doing so until several clutches of eggs have been laid.

As soon as the young can fly they are deserted by their parents, and for the remainder of their infancy they live in flocks by themselves, wandering far from their birthplace, and frequenting mudflats, low-lying coasts, and the open sea. The Lesser Black-backed Gull becomes a great nomad after the breeding season has passed. It still continues gregarious, however, and not only keeps company with its own kind, but often mixes with Herring Gulls and even with Kittiwakes. The latter birds are often sorely persecuted by this bold Gull, and he robs them mercilessly of the fish they so patiently search for and capture. The Lesser Black-backed Gull in its search for food often visits inland districts, especially in winter, and it may then be seen on the fallows in quest of grubs and worms, and in autumn on the stubbles picking up the scattered grain. Like the Herring Gull, it is almost omnivorous in its diet; it is incessantly searching along the coast or above the water for food of all kinds. It catches many fish itself, it robs the smaller and more weakly Gulls of more. It will make a meal on almost any garbage floating on the waves or cast ashore by the tide. It eats carrion like the Raven, and visits the flight-nets to tear in pieces the Waders and Ducks and Geese that may chance to be caught in them; and I have known it make a meal on its own unfortunate companions lying dead in the snares! Like the Herring Gull, it is a persistent follower of ships, and attaches itself to the fleets of fishing smacks, waiting for the refuse of the nets on which it eagerly swoops as it is cast overboard. Like all the other Gulls, it swims well and buoyantly, but never dives. There are times when this bird stays far out at sea for many days together, resting when tired on

the waves, where it also sleeps. Except at its breeding-place, I have always found this bird to be a very shy one, never allowing a close approach when on land, and always extremely wary when flying near a boat or ship at sea. Vast numbers of these birds frequent the low coasts and muddy estuaries; but even the young birds, in flocks by themselves, are ever on the alert, and the least alarm causes them to take wing. It will be noticed that this bird and most of the other Gulls often run for a little distance ere taking wing, as if to gain an impetus before they rise.

The Gulls are eminently conspicuous birds when standing on a broad expanse of mud, or on the green turf or dark-looking rocks. They seem to be fully aware of this, and are ever on the look-out for the enemies their conspicuous dress is likely to attract. The more protectively coloured birds of the coast lie close until almost trod upon before they take wing, conscious of the safety they derive from their sombre dress. On the vast banks of mud the Gulls are the first to take alarm; the big gray Herons may be equally as wary, but they do not fly so readily. Long before you get near enough to observe them closely, as they cluster in the shallows or bathe in the little pools, the Gulls take wing, and in a scattered straggling host go off to safer quarters, leaving a few white feathers on the mud or floating on the shallow water, to mark the place which they have left.

Rarest and most local of all our resident Gulls, the Great Black-backed Gull (*Larus marinus*) here claims a passing notice. It becomes much more frequent in the wild rocky northern districts, and only wanders to low-lying coasts in winter. It is the shyest and the wariest of our Gulls, and probably more oceanic in its habits than any of the rest. Like the other large Gulls, it is almost omnivorous, eating anything it can find along the shore or floating on the waves. It is a great robber of eggs, and at St. Kilda the natives persecute it

with a deadly hatred. In the breeding season it rarely congregates into large colonies, but a few pairs are scattered up and down the suitable parts of the coast. The rude and somewhat scanty nest is generally made on some inaccessible stack of rocks, and I have taken its eggs from the highest cliffs. Sometimes it selects a small islet in a lake, but nowhere does it venture to make its nest unless sure of a considerable amount of seclusion and solitude. Its eggs are three in number, the largest of all British Gulls', brown of various tints in ground colour, sparingly spotted with dark brown and gray. The loud harsh notes of this splendid Gull lend a charm to the scenes it frequents.

Closely allied to the Gulls, but easily distinguished from them by their cuneiform tails, two species of Skuas must be included among our rarer birds. The first of these is Richardson's Skua (*Lestris richardsoni*), which has its breeding stations on the Outer Hebrides, the Orkneys, and Shetlands, and some parts of the northern mainland. It is distinguished from the other British species of Skua by its small size, narrow-pointed central tail-feathers, and black tarsus. It is a bird of rapid powerful flight, and is constantly chasing the Terns and the smaller Gulls to rob them of their newly-caught prey. It is a bold robber, and best described as the Hawk among Gulls, feeding on the helpless young, and stealing the eggs of any species it is able to attack with impunity. It also eats the refuse of the shore, and picks up any floating garbage in its airy flights above the sea. Richardson's Skua is a summer visitor to our islands, migrating along the coasts in April and laying its eggs about the end of May. It breeds in scattered colonies on the moors of the wild lonely north, sometimes a considerable distance from the sea, sometimes on the hills just above the shore. The nest is a simple one—a little hollow scratched out on the open moor, with scarcely any shelter near it, lined with a few blades of dry

grass and dead leaves. Here the female lays two and sometimes three eggs, olive-brown and reddish-brown of various shades in ground colour, spotted, blotched, and sometimes streaked with dark brown and pale gray. It is almost impossible to distinguish them from those of the Common and Black-headed Gulls. The note of this bird is a loud chattering kind of cry.

The second species is the Great Skua (*Lestris catarrhactes*), whose only claim for notice here is the fact that it breeds in one or two localities in the Shetlands, where it is jealously preserved from extinction. It is more of an oceanic species than the preceding, otherwise closely resembling it in its habits, food, and mode of obtaining it. At the end of April the birds quit all our southern coasts and seas, and visit their moorland haunts for the purpose of nesting. The eggs are laid in May, and as soon as the young can fly the land is practically deserted for the open sea. This bird is very bold at the nest, and swoops angrily round the intruder's head as he examines its home. The nest is slight, and the eggs, only two in number, resemble very closely those of the Herring Gull, but the markings are not so clearly defined. The large size, dark colour, and only slightly rounded tail are sufficient characters to distinguish this species.

THE PUFFIN

(*Fratercula arctica*)

WE have little opportunity of observing the habits of the Puffin except at its breeding-places, for when once its domestic duties are over it deserts the land and lives almost exclusively at sea. There are few places on the coast at all suitable to the requirements of this bird, where it does not live in abundance, and in some districts its numbers are almost past belief. It is a very gregarious bird, breeding in extensive colonies and frequenting the sea in vast flocks. It cannot be confused with any other bird on the coast, its big bright-coloured beak and singularly comical facial expression being sufficient to identify it anywhere and everywhere.

Early in spring the Puffins come up from the sea to their various breeding-places, and then their habits can be studied to best advantage. In some places these interesting little birds make their appearance with singular regularity every season, coming almost to a day. This time varies considerably in certain districts—in some places it is early in March, in others not before the beginning of April, whilst yet in others not until the beginning of May. From all parts of the sea the birds come to the wonted breeding-place; in thousands and tens of thousands they arrive, and the cliffs and islands where they nest suddenly swarm with Puffins, all congregated for the summer. The sea near a haunt of the Puffin is almost continually sprinkled with these birds diving and

swimming in all directions, and constantly flying to and from the land. It is by no means a shy bird, and often allows a boat to approach it within a few yards; but you may frequently see it dive with marvellous rapidity when alarmed, and rise again to the surface far out of danger. It swims buoyant as a cork on the heaving sea, and dives for long distances, absolutely flying under water with almost as much ease as through the air. It always prefers to escape from danger by diving or swimming hurriedly away; but when flushed you will find that it rises lightly from the water, and on rapidly beating wings flies quickly off. The whirr of its wings as it rises from the sea or starts from the cliffs is singularly loud. Not only are the Puffins gregarious, but they are very sociable too, and often mingle with Guillemots, Razorbills, and other birds. Upon the ground it is by no means awkward, in spite of its legs being placed so far backwards; and you may often see it run bolt upright, flapping its little wings with great rapidity to balance itself.

The principal food of the Puffin is small fish, especially sprats and the fry of the larger species, notably of the pollock and the herring, for which it dives to a great depth. In addition to fish the bird also eats small crabs, shrimps, and other crustaceans, but I do not think it ever touches vegetable substances of any kind. Puffins often fly enormous distances to feed. Wherever the shoals of fish may chance to be, the birds will visit them; and they may often be seen in little flocks flying swiftly over the sea to and from the distant feeding-places. I have often seen the Puffin five and twenty miles from land fishing in the open ocean; and the birds that breed in St. Kilda frequently fly to the distant Minch to feed, making a journey there and back of close upon a hundred miles!

Vast numbers of Puffins breed close together, and their nesting season begins in May. A variety of places are

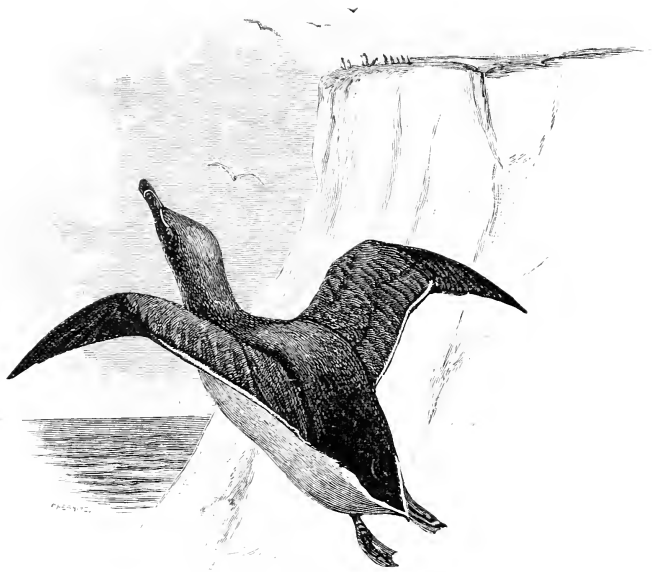
chosen, in which the birds establish their busy colony. The nest is placed at the end of a long burrow, something like a rabbit-hole. This burrow is generally made by the birds themselves, either in the soft peaty soil of low islands—as for instance at the Fernes, or in the ground at the top of the cliffs—as at Flamborough, the Bass Rock, and in the Hebrides. Other localities, however, are often chosen. At the Bass a colony of Puffins have established themselves in the walls of an old fortress overhanging the sea; and at St. Kilda I have often taken its eggs from crannies in the cliffs, or from under large masses of fallen rock on the shore. There is also another breeding-place of these birds at St. Kilda in a sandy bank above the sea, in just such another situation as we should expect to find a colony of Sand Martins. The colony at the Ferne Islands is not nearly so interesting as some others which I have visited. Few birds are to be seen here, but the ground under foot is undermined with their burrows, which are constantly falling in as you wander over the ground knee-deep in sea-campion and coarse grass.

But St. Kilda is the Puffin's paradise! All other breeding-places of this bird that I have seen sink into utter insignificance when compared with the vast colonies there. Every available place is burrowed and honeycombed with their holes, and the sea is often black with birds. The small island of Doon and the cliff of Connacher are their headquarters. The island is so undermined with Puffins' burrows that there is scarcely room for all the birds, and many of them have taken refuge under the large masses of rock lying on the steep grass-covered hillsides that slope precipitously to the sea, whilst others quarrel with the Razorbills in the cliffs. When I landed on this magnificently bold rugged island, whose peaks, like dismantled fortresses, rise six hundred feet or more from the water, the Puffins in a dense, whirling, bewildering throng swept out from their holes and

from their perching-places on the rocks, all flying down the slopes to the sea, when many of them rose high in air and returned to circle above our heads in wild alarm. No words of mine can do justice to the strange and wonderful scene—the whole face of the island seemed slipping away from under me as the mass of birds swept by. Not a single bird uttered a note, but the noise of their rapidly-beating wings resembled the distant rush of wind. The highest peaks of this rocky isle were vignettied in a drifting mass of Puffins, flying about, round and round, and to and fro, just as gracefully as Swifts. This habit of the Puffin was new to me, and interested me much, for the bird looks so heavy, and its wings are so narrow and small, that I never thought it capable of indulging in such prolonged aerial movements. The Puffin's flight may be witnessed to perfection if you wander along the summit of the cliffs on a breezy day. It can and does fly most gracefully, poising itself on its little wings, and spreading out its two bright orange-coloured legs as a rudder to assist the short tail in steering it through the circumambient air.

Doon, however, does not harbour so many Puffins as the awful precipice of Connacher, and when I saw them leave this noble cliff like swarm after swarm of bees, and congregate in one dense enormous cloud, the scene was grand—overpowering in its magnificence. The Puffin is highly prized as a delicacy by the natives of St. Kilda. Man and woman, young and old—even the very children—join in the chase of this remarkable bird. They dig them from their nests, set horsehair snares for them in every accessible part of the cliffs, and take them with long rods, at the end of which a noose is fastened. The birds are simply plucked, drawn, and salted, and hung up to dry in long strings across the ceilings of the cottages, where the smoke from the turf fire assists to cure them.

The Puffin, as I before remarked, nests in a hole. Both birds help to dig this out, and the scanty nest is made at the end of the burrow, which is sometimes several yards in length, though more often only a few feet. The nest is a simple one, being composed of a little dry grass and perhaps a few feathers. On this the female lays a single large egg, grayish-white in ground colour, very faintly spotted and blotched with brown and dark gray. As a rule the markings can only be seen on the egg when newly laid—contact with the birds' feet soon covers it thickly with dirt. Both parents take it in turns to sit on this solitary egg, and the young bird remains in the burrow until it is nearly or quite able to fly. The old birds disgorge their own food to feed the nestling, but as it gets older they bring a plentiful supply of freshly-caught fish, for which it often waits at the entrance to the burrow. As soon as the young are safely reared, the Puffins strike their camp and go down to the sea in quest of fresh feeding-places, wandering far and wide until the approach of the following breeding season. It should here be remarked that the young birds resemble their parents in colour, but the beak is small and dark brown, almost like that of the young Razorbill. I have never heard the Puffin make a sound in the air or on the water, but when dragged out of its hole it often utters a harsh note of remonstrance, and will fight fiercely with its beak and claws, being capable of inflicting a very severe wound.



THE RAZORBILL

(*Alca torda*)

THE Razorbill is a bird of the rocks, collecting in early spring from all parts of the British Seas, and taking up its residence in its old breeding-places, precisely as is the case with the Puffin. Wherever the cliffs are high and bold and rocky enough you may be sure of meeting with the Razorbill between the months of April and August. Like the Puffin and the Guillemot, it is very gregarious, and not only associates with its own kind, but may be seen repeatedly in the company of various other rock-haunting birds. Whether on sea or land its habits are intensely interesting, and the bird becomes even more so when we bear in mind that it is the nearest surviving relation of the now probably extinct Great Auk.

As our fishing "cobble" dances lightly over the swelling sea, bending to the breeze which bellies out the big brown sail on this bright June morning, we are sure to meet with the Razorbill, especially as the coast we have just left is a rocky one, and precipitous islands are in the neighbourhood. What a grand imposing wall of cliffs the brave old headland looks, now that we can see its lofty sides and wide extending range of cliffs in one unbroken outline! How noisy the Kittiwakes are this morning, clustering thickly on the lower rocks, and what an animated scene the steepest parts of the cliffs present! Parties of the birds we are in quest of keep going and returning; dotted thickly over the sea, we see them swimming lightly, their pure white underparts glistening in the sun as the big waves lift them up on their curling crests. They are by no means shy; no noisy oars alarm them as they rattle in the rowlocks; we are allowed to approach within a few yards and admire the beautiful contrast of their smoke-brown and brilliant white plumage, and deep black beaks, crossed with a narrow white line. At a glance we can see that the true home of the Razorbill is in the water. Watch yonder bird turning his head from side to side as he swims rapidly ahead of our boat, which must be going a dozen knots an hour. See how quickly he can turn; how deftly he throws the salt water over himself. Watch him closely; he is sure to dive directly. Ah! there he goes like a flash under the surface; and to what a depth he must have descended, for several moments elapse before he rises again a few yards farther on, the water running off his back in beads that glint like diamonds in the sun. There, away on our port-bow, a Razorbill is sitting fast asleep on the rolling waves, floating like a cork; another and another are swimming rapidly about, ever and anon diving in quest of their finny prey. We are nearing the shoal of fish now, and the birds crowd thickly on every side. Bird after bird dives

and reappears ; every now and then one rises into the air and settles a little distance away ; while all the time birds are going to and returning from the distant headland, now lying low and indistinct on the horizon. We have a good opportunity of witnessing the flight of the Razorbill now. See how heavily he rises from the water, sometimes flapping along the surface, sometimes starting off at once. How rapidly the narrow wings are moved, as if the bird were compelled to beat them as fast as possible to prevent its heavy body falling back into the water again. Once well up though, the birds have no small command over themselves, and are rapidly lost to view in the distance. We must be at least ten miles from the rocks where these birds are breeding, but this distance is nothing to a Razorbill ; and little parties of birds may oft be seen flying quickly and silently close above the sea to much more distant feeding-places.

The Razorbill feeds almost exclusively on small fish, very similar to those which the Puffin eats, and it is especially fond of fry. It chases the fish through the water quite as dexterously as the Hawk hunts the little birds on land, and is capable of remaining under the surface for a surprising length of time. It often visits the bottom of the shallower portions of the sea, and searches amongst the rocks and seaweed for crustaceans and other small marine creatures, yet it never obtains any food on the shore, generally diving for all the prey it captures.

But let us put our boat about and tack towards the distant land again. We have seen the Razorbill at home in his native sea : now let us visit his busy colony on the rocks and make ourselves acquainted with his domestic arrangements. We need not visit the smooth cliffs where the narrow ledges form a resting-place for Guillemots and Kittiwakes, for there our search would be futile. We must confine our operations to the rough broken rocks, where the face of the

cliff is full of crevices and cracks, and the broad platforms thickly strewn with big boulders that have from time to time fallen from above. The Razorbill must have a cranny or a hole of some kind in which to lay its egg. Where the cliffs are very rugged and broken, I have often known it wander under the loose rocks for several yards and lay its egg in a place absolutely inaccessible. The rugged cliffs at Flam-borough are the Razorbill's paradise ; but the wild precipices of St. Kilda make even these large colonies look small and insignificant. I have taken the eggs of the Razorbill in many places and in all parts of the cliffs, yet I have never seen them in the open. As you climb barefooted along the face of the rugged rocks, the Razorbills on every side eye you with suspicion. Sitting bolt upright, the birds sway their heavy bodies from side to side, and often bob their heads up and down ; and as you approach them still more closely they dart downwards into space on rapid wing to the wild tumultuous sea hundreds of feet below. You may also hear them scrambling about in the rock fissures, and catch momentary glimpses of dozens of birds peeping out of the nooks and from under the boulders. Birds are ever leaving the cliffs and returning to them ; on every little projection a Razorbill or other rock-bird is sitting. The Razorbills in many cases are so reluctant to leave their egg that you may catch them in your hand as they crawl out of the crevices. The Razorbill lays one egg only, but if this is taken she will lay a second and often a third or a fourth, if they are as repeatedly removed. The bird makes no nest of any kind. On the bare rocks or loose soil under them the egg is laid. I am of opinion that the Razorbill pairs for life, and every season frequents one particular part of the cliffs. I once took the egg of this bird from a Puffin's burrow on the island of Doon, and I was assured by my companion Donald that this one burrow was occupied by a pair of

Razorbills every year. Both parents help to incubate the solitary egg, but I do not think one ever feeds the other on the cliffs.

The egg of the Razorbill is a very handsome one, and subject to considerable variation in size, shape, and markings. In ground colour they exhibit every tint between pure white and reddish-brown, and the blotches and spots vary from dark liver-brown to grayish-brown. The markings are very bold and decided and large—most numerous round the broad end of the egg, where they often form an irregular zone. On some eggs many streaky lines occur; and in rare instances you may find one very sparingly marked with colour. The naturalist must bear in mind that the eggs of the Razorbill never exhibit even the faintest tinge of green externally; but when held up to the light the inside of the shell displays a strong tinge of clear pea-green—a characteristic, by the way, which will enable him readily to distinguish them from those eggs of the Guillemot which approach most closely in colour to those of the Razorbill.

The Razorbill only rears one young bird in a season, which either remains on the rocks till it is able to fly, or is carried down to the sea by its parent shortly after it is hatched. It would be profoundly interesting were we able to discover the subtle law which governs the birth of male or female birds in this species. So far as we can see, the sexes are about equal in numbers, yet each pair of birds only produce one male or female chick each year. When the young are safely reared the Razorbills desert their rocky home and disperse over the sea in every direction in quest of their food, rarely visiting the shore at all. After severe gales in autumn and winter I have known hundreds of these birds to be washed up by the tide drowned, but the storm must be a violent one indeed to render the sea too rough for the buoyant, sturdy Razorbill.

THE GUILLEMOT

(*Alca troile*)

THE Guillemot is the commonest of all the various species of sea-birds that nestle on our ocean cliffs. There is not a headland or an ocean rock which does not contain this bird in varying numbers between the months of May and August. Eminently gregarious at all seasons, its habits can be readily studied, both in the sea and at its lofty breeding-place. The Guillemot is one of my favourite birds—I have seen so much of him. He has been my companion in many strange scenes, on the stupendous rocks and the lonely sea. I have met with him under many circumstances, and watched his actions in a great diversity of haunt, but never failed to gain unwonted pleasure from a contemplation of his curious ways, and the wild grandeur and sublimity of his rocky home. Amongst such a wonderful choice of scene it is difficult to select any one place where the habits of this bird can best be studied. Let us visit a few of them in turn—the variety may serve to interest the reader.

We are at Flamborough on a bright day in early June. In spite of our repeated visits, these grand old weather-beaten cliffs seem always new and attractive. The waves still beat with terrific force against the white rugged walls of rock, and leap forty feet or more in showers of spray and foam up their hoary sides. You may see the Guillemots in endless rows standing on the ledges and shelves of rock,

as you peer cautiously over the depths and look down, down, down, until the brain reels and the eye becomes dim at the strange and wonderful sight. In constant streams the busy Guillemots are passing to and from the sea ; all is animation and excitement ; and where the birds are pouring off the narrow shelves you may see their beautiful eggs lying so provokingly out of reach. The restless sea below is full of Guillemots all swimming and diving about in quest of food, looking like bubbles or foam flecks tossing on the dark blue waves. Were you to follow them there, you would find their actions very similar to those of the Razorbill. The Guillemot resembles that bird in the colour of its plumage, but may be readily distinguished by its long pointed beak. It sits high and lightly in the water, swimming with head erect like a duck, and dives with the rapidity of thought. I have known it remain under the surface for more than a minute, and the great depth to which it descends may be thus readily noted. Many Guillemots are often taken in the herring-nets as the birds dive after the small fish. The Guillemot flies quickly if somewhat heavily, and its narrow wings are beaten with great rapidity as it rises from the water. It always prefers, however, to dive out of danger, and only uses its wings when compelled. Notwithstanding its somewhat laboured flight, this bird often visits very distant feeding grounds, flying home to its rocky haunts at eventide in little bunches or compact flocks, silently and rapidly, just above the surface of the sea. It is by no means a shy bird, and will allow your boat to approach within a few yards ere it dives or flies away. Wherever the shoals of fry are swimming near the surface, there the Guillemots unerringly congregate ; and few sights are more novel or interesting than the sea thickly studded with these feeding birds. The Guillemot is an expert fisher, chasing its finny prey through the water with marvellous speed. Its food is principally composed of

fish, the young of many species, especially the fry of the pollock and the herring, and on sprats. In diving the bird also secures many marine animals and insects, but it never comes on land at all for the purpose of feeding. In all its gatherings both on sea and shore, the Guillemot, like the Razorbill, is a singularly silent bird, and the only sound I have ever heard it utter is a low grunting noise, as it sits upon the rocks, or struggles with its companions for a place on the crowded ledges. But let us leave the sea below the Flamborough Cliffs and pay a passing visit to the Ferne Islands, far to the northward. Were we to go by sea, the Guillemot might constantly be seen all the way in the water feeding; and as we approach these famous bird nurseries the more numerous do the birds become.

The Ferne Islands are one vast habitation of sea-birds, but the Guillemots are confined to a single colony. The islands are low and offer few suitable breeding-places for this bird. The only colony of Guillemots at this bird bazaar is situated on the flat tops of a group of stack-like rocks close to one of the islands. These cliffs are known as the "Pinnacles." Standing on this island and looking across the narrow channel, the scene that presents itself to our notice is a most interesting one, and one that can never be forgotten. The flat tops of these cliffs are one dense moving mass of Guillemots, so closely wedged together that it seems impossible for another bird to find room. Yet Guillemots are coming from the sea and trying to find a standing place, pushing off their companions as they alight, and the sea below is dotted everywhere with Guillemots. Scarcely a sound is heard from them, though on the sides of these rock-stacks numerous Kittiwakes have their nests and clamour incessantly at our unwelcome intrusion. As we make preparations for getting on the top of the rocks the Guillemots begin to leave. From every side they pour off in streams to the water, knocking off

many eggs in their hurried departure ; and by the time we have reached the summit not a bird is left, but the white rock is thickly strewed with hundreds upon hundreds of their beautiful eggs of almost every conceivable variety of colour. The sea is now one mass of Guillemots, waiting patiently for us to leave, when they will hurry back again to their eggs.

Many Guillemots breed at the Bass Rock, and I have taken their eggs from most parts of the cliffs, but nowhere do the birds crowd so thickly together as at the world-famed "Pinnacles." At the Bass the Guillemot lays its egg on the narrow ledges and amongst the little chinks and cracks. It has been said that the pear-shaped egg of this bird is so formed as to turn round on its own axis when blown by the wind. This statement is erroneous, and was never made by one who had explored the cliffs and seen the eggs of the Guillemots on the ledges. The theory must have originated through some learned book-maker rolling and blowing the egg-shells of this bird about his study table! Of the absolute boat-loads of eggs of this bird which I have taken in almost every part of its rocky home, I have never seen one saved from falling over the cliffs by so turning on its axis ; and I have been down the rocks many a time in half a gale of wind. The birds in their hurry to leave the rocks often knock their eggs over into the sea ; but as a rule the eggs are laid on uneven ground in hollows of the shelves and ledges, where they are absolutely safe. I have often been amused, when exploring the cliffs for the eggs of this bird, to see an old Guillemot pushing her egg from under her with her feet as I approached, previous to quitting the rocks for the sea beneath ; and it is more than probable that the sitting-birds are very careful when they leave their eggs voluntarily. At St. Kilda, too, the Guillemot breeds in incredible numbers. The birds may be seen sitting in long

rows on almost every precipice, tier above tier, and row beyond row, all busy hatching their eggs, whilst the sea below is swarming with Guillemots and other rock-haunting species.

The Guillemot lays only a single egg, and if this is taken she will lay another and another, but in no case does she rear more than one young bird in a season. It would require a chapter to fully describe the endless tints with which the Guillemot's eggs are painted. The ground colours are dark green, yellowish-green, reddish-brown, cream, white, and pale blue, with every intermediate shade ; the markings, which are distributed in bold irregular blotches, spots, streaks, and zones, are composed of browns and grays and pinks of every possible shade. Some eggs are much more handsome than others ; and occasionally a few are met with without markings of any kind. A beautiful variety is white, intricately streaked and netted with pink ; others are green, streaked in the same manner with yellow or light brown. No other egg with which I am acquainted varies in such an extraordinary manner ; and a carefully selected and judiciously arranged series of these beautiful objects makes one of the prettiest sights an oological cabinet can display. Vast numbers of these eggs are gathered for food in many places, especially at Flamborough, the Ferne Islands, the Orkneys, and St. Kilda. Both birds assist in incubating the egg ; and as soon as the young Guillemot is hatched it is conveyed to the water by its parent, and lives on the sea until it is able to fly.

As soon as the breeding season is over the Guillemots desert their lofty homes and betake themselves to the open sea. They now very rarely visit the land, except when driven in by unusually severe weather, when they often congregate in thousands in the sheltered bays and other parts of the coast. Now the Guillemot becomes a regular nomad,

wandering hundreds of miles away from its breeding-places, following the shoals of fish up and down the wide waste of waters, sleeping on the sea, rarely using its wings, and still more rarely visiting the shore. The Guillemot never by any chance flies over the land ; it never flies inland from the rocks even for a few yards, but when disturbed unerringly makes for the sea. It is not only a gregarious bird, but moreover a very sociable one, and during the autumn and winter months allows many other sea-birds to join its gatherings.

We cannot well dismiss the Guillemot without giving a passing glance to the variety of this bird known as the Ringed Guillemot. It only differs from the Common Guillemot in having a narrow white band round the eye, and which becomes a streak for some distance behind and below it. It may be seen mixed with the Common Guillemots, but it is decidedly a much rarer bird. Whether it be a species or only an accidental variety of the Common Guillemot I am not prepared to say, but certainly its habits do not differ in the slightest perceptible manner, nor does the colour of its eggs, from those of that bird.

At most of the breeding-places of the Common Guillemot on the west coast of Scotland and in the north of Ireland, the observer may be almost certain of meeting with the Black Guillemot (*Alca grylle*). It is only about half the size of that species, uniform black in colour, glossed with green, and has white bars on the wings ; its legs and feet are bright red. In most of its habits it very closely resembles the Common Guillemot, but in its nesting economy is similar to the Razorbill. It breeds in the holes and crannies of the cliffs, sometimes at a considerable distance from the water, making no nest. I have taken its eggs in St. Kilda and in several other parts of the Hebrides, but have never found them to exceed two in number. They are white or very pale

green in ground colour, beautifully blotched and spotted with rich dark brown and gray. The observer will never find the Black Guillemot in very large colonies, a few pairs being sprinkled up and down the coast—a point in its economy much different from the Razorbill or the Common Guillemot. After its moult in autumn the Black Guillemot is greatly changed in appearance; the head and neck are only mottled with black, the lower back and many of the smaller wing coverts and upper tail coverts are barred with white, and the whole of the underparts is white.

Two other species of birds, most nearly related to the Guillemots, here require some passing notice. The first of these, the Red-throated Diver (*Colymbus septentrionalis*), is a bird of the Scottish lochs, and also breeds in the north-west of Ireland. Its wild unearthly cry, like a human being in pain, startles the naturalist, especially at dusk, as it sounds loudly over the water in these wild mountain solitudes. Particularly vociferous does this bird become at the approach of rain. The Red-throated Diver probably pairs for life, and is not very gregarious or sociable even in winter—each pair keeping to its own particular haunt. Upon the land it is clumsy enough, its legs being placed too far back to enable it to walk with ease; but in the water it is almost as much at home as a fish. When alarmed it gradually sinks itself lower and lower into the water, until almost every part but the head is concealed below the surface. This Diver breeds in May, generally choosing a small island in its native loch, on which it makes a slight and slovenly nest—a mere hollow, sparingly lined with bits of dry herbage. Two eggs are laid, olive-brown in ground colour, boldly spotted with very dark brown. The sitting-bird is very wary, and its mate also is ever on the alert to give alarm at the approach of danger, when the eggs are left, the parent shuffling down a beaten track to the water. Its food is almost exclusively composed of fish.

The Black-throated Diver (*Colymbus arcticus*) is a much rarer species than the foregoing, and only breeds sparingly in a few parts of the Highlands and the Western Isles. In its habits, food, note, and manner of nesting it differs little from its congeners. It makes rather a more substantial nest, either a floating structure like a Grebe's, or a hollow at some distance from the water's edge, neatly lined with bits of dead herbage. It lays two eggs, similar to those of its ally, but rather darker and browner in ground colour, and less profusely spotted. Both these species of Diver wander far and wide during winter, and then visit our southern seas in quest of food, becoming much more oceanic in their habits at that season. The Black-throated Diver is readily distinguished by its purplish-black throat, which in the former bird is reddish-chestnut.

THE LITTLE GREBE

(*Podiceps minor*)

WHEN wandering along the banks of the sluggish streams, where the water-side is fringed with tall reeds, coarse sedgy grass and flags, we often see a little dark brown bird swimming quietly about, or catch a momentary glimpse of it as it dives with great rapidity and pursues its way under water to a hiding-place amongst the vegetation. This curious bird is the Little Grebe. It is very skulking in its habits and often overlooked. It prefers to frequent small ponds and quiet pools in the corners of fields, and may often be seen in the long narrow reaches of stagnant water at the bottom of railway embankments, especially if there are plenty of reeds and bulrushes to afford it the shelter which its retiring nature needs. In many of its habits it closely resembles the Moorhen. Like that bird it is a resident in this country, and remains closely attached to its little pond right through the year, unless a long-continued frost seals its feeding grounds and compels it to wander away in quest of more suitable haunts. I have known it then desert the inland districts altogether and seek the brackish waters near the coast, frequenting the drains and weedy backwaters. On one occasion I met with several of these little birds on a swift flowing stream, far away from their accustomed haunt, which was frozen. At first I mistook them for Dippers, in the dusk of the wintery afternoon, but easily identified them

when they took flight and displayed the white bar across their wings. Many little Grebes come to our shores in winter from more northern lands, migrating at night, and they are sometimes caught in the flight-nets on the Wash, in company with the Great-crested Grebe, their much larger congener. These refugees from wintery storms rarely come far inland, and I do not think many of them remain in this country through the summer.

The Little Grebe is rarely seen on the land. Its true home is the water, and it is almost as aquatic in its habits as the fish themselves. You may sometimes see it run out of the rushes and wander up and down the banks of the pool, especially in early morning or in the dusk of evening; but if alarmed or disturbed, it runs with great speed into the nearest cover, and you may wait for hours without seeing it venture forth again. Sometimes, however, this little bird displays a fearlessness quite at variance with its usual manner; and I have repeatedly watched it swimming quietly about the pool as a railway train dashed by not twenty feet from where it floated on the water. Although the feet of this bird are not webbed, but furnished with lobes like those of the Coot or the Phalarope, it can swim with perfect ease, and dive with marvellous skill. It is also capable of running quickly through the tall weeds, and threads its way between the thick stems of the bulrushes with great speed, rarely if ever allowing itself to be seen or flushed even by a dog. It is not a noisy bird by any means, and its usual call-note is a low and somewhat plaintive *weet*.

The food of the Little Grebe varies a good deal, according to the locality the bird may chance to frequent. In most districts it catches small fish by diving after them in the water; and insects and their larvæ are eaten in abundance. It also picks the various little snails from the stems of the herbage, or from the mud at the bottom of the water, and surprises the tiny frogs

on the banks and in the shallows. The spawn of the frog and of various kinds of fish is also eaten, and it occasionally devours a few buds and shoots of herbage. On the coasts and in the brackish waters near them it feeds largely on shrimps, whilst in the running streams the larvæ of the drake and caddisfly is frequently caught.

The Little Grebe breeds early, and rears several broods in the year. If the weather is mild, we may begin to search for its bulky nest amongst the reeds by the middle of April, but in backward seasons it is of little use to go in quest of it before the beginning of May. The Little Grebe usually builds a large floating nest, which is best described as a mass of aquatic rubbish, with a little cavity at the top, in which the eggs are laid. Dead reeds and rushes, grass pulled up by the roots, living and dead water weeds—all are massed together in rude confusion; but the hollow containing the eggs is more neatly finished. Sometimes the nest is made amongst the tall rank vegetation on the bank, at others it is built between the bank and a dense thicket of reeds, while yet again it is often at some distance from the shore, floating on the edge of the tall flags and rushes. The nest usually contains five eggs, but as likely as not only three or four—in rarer cases as many as six. These when newly laid are pale bluish-white, but soon become stained and dirty through contact with the wet nest and the feet of the old birds. They are rather peculiar in shape, being almost as much pointed at one end as the other, and the shell is rather coarse in texture.

There is much of interest in the nesting economy of this little bird. In the first place, when leaving its nest it always carefully covers its eggs with bits of weed and rush, doing this in some cases remarkably quickly. At a moment's warning the hen will contrive to cover her eggs before leaving them; and she must be flushed from her nest very suddenly

indeed to be prevented from making this provision for their safety. Grebe's eggs are very conspicuous objects, and often lie in a very conspicuous nest, so that there can be no doubt that this singular proceeding is of great benefit and saves many eggs from discovery. The more time she has, the more carefully does she complete the task of covering them, so that in many cases the nest looks nothing more than a heap of rubbish. Time after time you may visit her nest, and just as surely will she strive to cover her precious eggs. Sometimes, by walking quietly up and peeping at her between the reeds, you may see her busy in the operation picking bits of material from the nest, and spreading them rapidly over the eggs. If the weather chance to be windy, and the water washes much, the old Grebes constantly keep adding fresh material to their nest to prevent it from being carried away. Both birds assist in hatching the eggs and tending the young brood. Soon after the latter is hatched the tiny young Grebes take to the water, where they soon dive and swim as actively as their parents. They often visit the nest and sit on it, whilst the old birds search for food for them; and if suddenly disturbed the mother bird will often take a nestling under each of her wings and dive rapidly into the water with them, rising up in a place of safety some distance away. The young Grebes in their downy covering are beautiful little creatures, black striped with brown on the upper parts, nearly white below. It is a most charming sight to watch a family of these birds sporting on the quiet pool, swimming and diving, all unconscious of danger, several of the chicks probably standing on the broad leaves of the water lilies, or nestling close inshore amongst the vegetation on the banks. In autumn the Little Grebe often gathers into small parties, but is never very gregarious in its habits.

The Great-crested Grebe (*Podiceps cristatus*), in spite of continued persecution, still breeds in many parts of the

British Islands. It is more gregarious than the Little Grebe, and shyer, otherwise very closely resembles it in all its habits. It is seldom met with on small pools, but prefers to frequent large lakes, and is especially partial to the open broads. Where the bird is common, numbers of nests are made close together. These are generally floating structures amongst the reeds, made of rushes, flags, and aquatic vegetation of all kinds. The eggs, from three to five in number, are similar to those of the preceding species, but of course are almost double the size. This handsome bird is distinguished from all the other Grebes by its large size. Were it not for the lamentable manner in which this poor bird is killed for the sake of its downy plumage, there can be no doubt that its numbers would soon increase, and its presence lend life and ornament to many a now solitary rush-fringed pool. When will ladies cease to follow the fashion of wearing Grebe's and other birds' skins for ornament?—a practice which costs so many innocent lives every year, and robs so many wild scenes of their fairest charm!

THE MANX SHEARWATER

(*Puffinus anglorum*)

FAR out at sea when the evening's dusk is falling you may often observe a dark-coloured bird with white under plumage flit by just above the waves—another and another make their appearance, and you soon find out that a party of Manx Shearwaters have paid your vessel a passing call. They are nocturnal birds for the most part, spending the hours of daylight in their burrows, and coming out in the gloom to speed across the frowning waters in quest of food. There is something very exciting about the appearance of this singular bird. The noisy Gulls which have been playing about all day drop slowly astern as the sun nears the west; the parties of Razorbills and Guillemots and Puffins have sped away to their distant breeding colonies; and the wide waste of waters seems unusually desolate and dreary as the night approaches, and the evening breeze fluttering in the sails and through the rigging is the only sound that breaks the oppressive stillness. But the hour of the Manx Shearwater's ghostly revelry has come; he holds high carnival over the waste of gray waters, flitting about in most erratic manner in his wild impetuous course, following the curve of every wave, dipping down into the hollows, where he is almost invisible, and then mounting the foamy crests, where you catch a brief glimpse of his hurried movements.

I well remember how numerous these birds were on the

night of my voyage to St. Kilda. Our smack, the *Robert Hadden*, had lain becalmed in the Sound of Harris all day, but at night we caught the breeze, and were soon bowling along in grand style to the greatest bird bazaar our islands can boast. About midway across we met with the Shearwaters, and their gambols in the gloom were most interesting. We must have passed hundreds of birds busy feeding above the restless waves—birds all the way from their grand colony on St. Kilda; but a flight of fifty miles is nothing to a species of such rapid powerful wing. Not a bird was heard to utter a sound of any description, though on shore they are noisy enough, as we shall presently find when we visit their breeding-places. The Shearwaters cease their ocean flights at dawn, and hurry off on rapid wing to their retreats. The Shearwaters are the Swifts of the ocean—their long wings never seem to tire; following the curves of the mighty waves they search hundreds of miles of sea almost every night of their lives. They are the night birds of the watery wastes, coming out with dusk and going home with dawn.

St. Kilda is the grand headquarters of the British Shearwaters, and there the present species is one of the commonest of birds. Its great stronghold is on the island of Soay, although many pairs are scattered up and down the grassy cliffs of Doon and St. Kilda proper. For the greater part of the year the Shearwater's island is absolutely inaccessible to man. It rises sheer up from a troubled sea, save in one corner where the rocks are broken and form a bit of rugged beach, over which the tremendous Atlantic swell is almost constantly breaking. The sole landing-place is in the narrow strait between the island and St. Kilda, in which several stacks of rock rear their hoary peaks from the water, birds in thousands clustering on them in absolute safety. The island is covered with greenest turf, and the soft soil is well adapted to the needs of the

Manx Shearwater. The natives of St. Kilda say that this bird is one of the first to arrive in spring and one of the last to leave in autumn; although I strongly suspect it never quits the islands absolutely, but always returns there to sleep the year throughout. In all its habits the Manx Shearwater is nocturnal, and at the approach of darkness it becomes very garrulous, as if engaged in noisy converse previous to setting out on its nightly wanderings. Its note puts you in mind of the Ring Dove's mellow call, and is aptly expressed by the syllables *kitty-coo-roo*, *kitty-coo-roo*. This note is uttered when the bird is sitting in its burrow, or when standing at the entrance, and when flying up and down the island, but never, so far as I can determine, when over the water. The Shearwaters betray their whereabouts by loud persistent cries, which, by the way, are only uttered at night, and that is the time the St. Kildans go in quest of this singular bird. On some quiet night in summer, when the restless sea is a little calmer than usual, the natives get on shore and harry the Shearwater's colony. Amongst the babel of cries the men proceed to work, knocking down many birds as they fly to and fro in the gloom, and dragging many more from their burrows. I have known several men take as many as four hundred of these birds in a single night, besides as many eggs as the boat could safely carry without being swamped in the rough treacherous seas that beat round this perilous coast.

The Manx Shearwater is a rather late breeder, and its eggs are seldom laid before the end of May. I have taken fresh eggs of this bird in the middle of June, as well as eggs highly incubated. I shall never forget my visit to the breeding-place of this bird at St. Kilda. I have taken many scattered nests of this Shearwater up and down the various western coasts, but never before had I seen it so common as here. We climbed the hills behind the little village, skirted the beautiful glen beyond them, and at last found ourselves on the summit

of the cliffs on the south-west coast of this interesting island. The sea was roaring and seething like a caldron below this mighty wall of rocks, and the spray was dashing in showers up the cliffs and over the broken boulders at their base as the big waves broke over them. A few Fulmars were to be seen here and there amongst the grassy parts of the cliffs, whilst in the rocks Guillemots, Razorbills, and Puffins sat in considerable numbers, and now and then Kittiwakes and Great Black-backed Gulls flew along the face of the precipice. Barefoot we climbed down the rocks to within a few hundred feet of the sea, and finally arrived at the place where the Shearwaters rear their young. The birds had made their burrows in the steep grassy parts of the cliff, where a foothold could only be obtained with difficulty, and where the least false step would hurl the unfortunate climber into eternity. The Manx Shearwater burrows in the ground just like a Puffin, and the holes in some cases extend for a very long distance, often far under rocks where it is impossible to get at the nest. At the mouth of all the holes which were tenanted there was a considerable heap of birds' droppings. Both birds assist in scratching out the burrow, and many holes are begun and deserted for no apparent reason. Some burrows were four or five feet in length, others were nearly twice that distance. At the end of the hole the Shearwaters make a scanty nest of dry grass, on which the female lays her single white egg. Some holes contained an egg and no bird, others contained the pair of birds but no egg. When taken in the hand the birds made little effort to escape, and when finally released they flew away in a very rapid but erratic manner, as if dazed by the brilliant sunshine. No birds were to be seen, although the holes in plenty all around betokened an abundance of nests. The Shearwater's activity begins with evening, and were you to visit their colony then the scene would be stirring and animated enough. This bird

only rears a single nestling in the year, which remains in the burrow until able to fly. Both parents sit on the egg, but the female by far the most frequently. If the single egg be taken the birds lay another, as is the case with most species.

The St. Kildans obtain quantities of oil from the Manx Shearwater, and its egg is a favourite article of food with them, as is also the bird itself. The food of this bird consists largely if not entirely of cuttlefish and sorrel, which latter substance it appears to eat in great quantities to counteract the injurious effects of its fatty food. It is very probable that the Shearwater preys upon cuttlefish of a different species to that taken by the Fulmar, as the remains in its stomach are much darker than those in the latter bird. The Shearwater will not refuse any scraps that may be thrown overboard, especially those of an oily nature.

THE FULMAR PETREL

(*Fulmarus glacialis*)

THE Fulmar Petrel is one of the most interesting birds found in British Seas, but is exceedingly local during the season of reproduction. Only one locality in all the wide extent of coast and rocky isle round Britain is favoured with the Fulmar's presence, and that is the remote St. Kilda—the grand home of so many sea-fowl. Here the Fulmar is a resident, but the natives will tell you that it deserts the islands to a bird from the middle of October to the middle of November, probably when it is moulting. Like its relation, the Albatross, it spends much of its time at sea, wandering far and wide over the trackless waters, even penetrating to the uttermost polar regions, where it is the hardy whaler's constant companion. The Fulmar therefore is only familiar to those whose business or pleasure takes them to the mighty ocean. Violent gales sometimes drive this bird to land, where I have repeatedly known it fall a victim to the treacherous flight-nets. It much resembles a Gull when at sea, and beats about in the same lazy manner, searching for any food that may chance to float upon the surface. The Fulmar is especially fond of whale-blubber, its powerful hooked beak readily tearing it to pieces. Cuttle-fish are its principal food, which it varies and regulates with sorrel, as do most birds of this order. The Fulmar also picks up many scraps of refuse thrown from ships, which it follows

for days. Small nuts are now and then taken from the inside of the Fulmar, picked up by the bird from the Gulf-stream, which has conveyed them from distant equatorial regions. The Fulmar swims lightly and buoyantly, and the waves are usually its only cradle. It is much more diurnal in its habits than the Shearwater and the other species of Petrel whose habits we are about to examine.

For the purpose of studying the habits and economy of the Fulmar I visited St. Kilda, and stayed nearly a fortnight on that lonely isle—in no part of its extensive range can the bird be observed to better advantage. In approaching these famous islands the ornithologist will gaze at them with great disappointment, for not a tithe of their bird-riches is exposed to view; not a single Fulmar can be seen, and the place seems almost destitute of bird-life. The illusion is but transitory. The great stronghold of the Fulmar is out of sight, behind the towering hills and crags that hem the small bay on three sides; and it is not until you have ascended them that a glimpse of the bird can be obtained. In crossing the forty miles of Atlantic swell that separates St. Kilda from the Outer Hebrides, a few stray Fulmars may fly round the vessel or flutter above the masthead; but that is the only sign we notice of the famous bird bazaar we are quickly approaching. My first impressions of the St. Kilda cliffs were disappointing. It was not until I had lived among them for some time that I fully realised their awful grandeur. Nevertheless, with a few exceptions, these cliffs are easy of access. Most of them are broken, and all are more or less studded with grassy slopes on which sheep graze in comparative safety. Some of the majestic rock-stacks, rising sheer up from the sea, are almost inaccessible to man, and it is very rarely they can be approached except in the calmest weather. I have seen the waves dash against them with such fury as to toss the clouds of spray and foam a hundred feet or more up

the wall of rock. In many places, although the cliff is very precipitous, it is covered with grass, sorrel, and other plants, and a loose rich soil. It is in these places that the Fulmar breeds in greatest abundance.

I shall never forget the imposing effect of this noble bird nursery. Just before I reached one of the shoulders of Connacher (the highest summit in the group, on one side falling to the sea in a majestic cliff twelve hundred feet high), a few Fulmars were to be seen sailing lightly above the cliff, then dropping down again into space out of sight. When I reached the summit the scene was grand. To do justice to it in a written description is in vain. Thousands and tens of thousands of Fulmars were flying about in all directions, but never by any chance soaring above the land. Backwards and forwards along the face of the cliff the grand army of fluttering birds passed to and fro, whilst the restless waves a thousand feet below were thickly dotted with floating birds. The *silence* of such an animated scene impressed me more than words can describe. Not a single Fulmar uttered a cry, but lower down the cliffs the Kittiwakes were noisy enough. In one vast ever-moving throng the silent Fulmars fluttered by like big snowflakes whirled and tossed by the breeze. No bird flies more gracefully than the Fulmar; it seems to float in the air without effort, often passing to and fro for minutes together with no perceptible movement of its wings; and I repeatedly saw a bird, head to wind, quite motionless for several seconds, the wind ruffling a few of its feathers. It is remarkably tame, and flutters past the face of the cliffs within a few feet of the observer, its bright black eye contrasting strongly with its snow-white dress. Sometimes it hovers like a Kestrel, or turns completely round in the air as if on a pivot. But let us leave the crowd of fluttering birds and direct our attention to those sitting quietly on their nests. In some parts of the cliff where the soil is loose and covered

with turf the ground is almost white with sitting Fulmars. Every available spot is a Fulmar's nest, and as you explore the cliffs birds are continually flying out from places where hitherto they had remained unseen. Far as the eye can wander along the sides of this glorious cliff, the Fulmars may be seen gradually dwindling into round white balls on the green sward as the distance becomes too great to distinguish their outline in detail.

The Fulmar begins to lay about the middle of May, and the young are able to fly in July. It very rarely burrows deep enough into the ground to conceal itself, and in the majority of cases only makes a hole large enough to half-conceal itself; whilst in a great many instances it is content to lay its egg under some projecting tuft, or even on the bare and exposed ledge of the cliff. I am of opinion that the Fulmar makes a hole of some kind whenever it can; but as the number of birds is so large many have to make shift in the bare situations. The Fulmar's nest is very slight, and in many cases is dispensed with altogether. Some of the nests I found in the bare rocks were very peculiar. They were placed on the ledges and in the crevices, and were made entirely of small bits of rock arranged very neatly. A little dry grass is the usual material, and in some cases no nest whatever is provided. The Fulmar lays only one egg, which is white and spotless, rough in texture, and with a strong offensive smell. Both birds assist in hatching this egg, as I observed bare sitting spots on the bodies of males as well as females. When the young are hatched they are fed on an oily matter ejected from the parent's throat. Should the Fulmar's egg be taken, as it often is, the female is said never to lay again that season.

The St. Kildans are very expert in catching the Fulmar. All the men are great climbers and fowlers, for the birds that breed here in such vast abundance are almost the only source

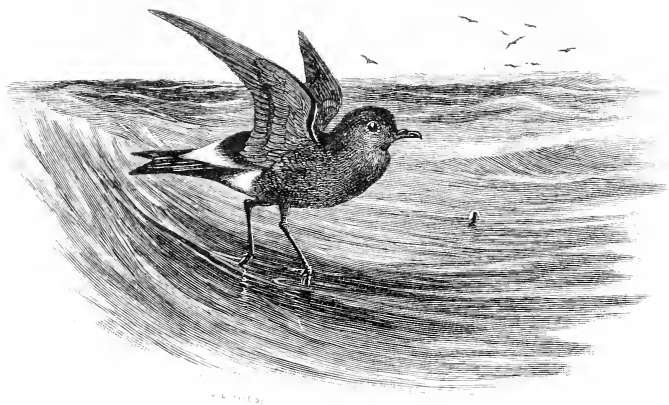
of their wealth. Every St. Kildan almost constantly wears a coil of hemp rope slung round his body, as well as a jack-knife hung with a string from his neck. The birds are taken with a rod about ten feet long, at the end of which, fastened to a hazel twig, is a plaited horsehair noose, stiffened for the greater part of its length with split quills of the Gannet. The fowler creeps stealthily towards the birds as they are sitting on their nests or standing on the cliffs, and slips the fatal noose over the head of bird after bird. As soon as the noose is over the bird's head the fowler draws the fluttering captive to him, and directly they are taken he usually breaks their neck and hangs them in his belt—the eggs, which he never leaves after taking the sitting-birds, are stowed away in his cap. When caught the Fulmar generally vomits a quantity of clear amber-coloured oil, and a little flows from the nostrils. During the Fulmar harvest in autumn the birds when caught are made to vomit this oil into dried gulleets of the Gannet, which the fowler carries for the purpose hung round his waist. This oil is very valuable as a sheep dressing, and is said to be a sovereign remedy for rheumatism. When the young Fulmars are almost full-grown the great event of the year at St. Kilda takes place—the Fulmar harvest is gathered in. Vast numbers of birds are killed, and the oil and fat extracted from them. The feathers are exported in great quantities, and the bodies are salted for winter provisions.

The grand home of the Fulmar becomes even more impressive when viewed from the sea below. The scene when the birds are frightened from the cliffs beggars all description. The myriads of birds are past all belief—the air is sensibly darkened by their enormous numbers; still the cliffs are white with sitting-birds. The Fulmars make the air one vast living snowstorm—the hordes of Puffins look like dense clouds of winnowed chaff. Tens of thousands of birds sweep round

the boat; and the face of the cliff seems crumbling away, as the birds in big white masses sweep from the towering heights towards the water. Little noise accompanies this extraordinary scene; but the silence only increases its weird impressiveness, and the rushing of countless wings seems like the remote hum of a mighty wind or the roar of a distant cataract. The lofty peaks of these lonely ocean rocks are vignettèd in the surging clouds of birds that seem as if they would descend and overwhelm us. Never in all my life did I feel so utterly insignificant as when below that vast and overpowering throng of birds! It is interesting to notice how the Fulmars keep to themselves, but tens of thousands of Puffins share the cliffs with them; and lower down, nearer the water, Kittiwakes cluster on every coign of vantage; whilst Guillemots and Razorbills in endless rows stand sentinel-like on every convenient ledge. It seems as if all the birds of the Atlantic were gathered here for their summer duties, and no place in the world can show more vivid pictures of bird-life than those which can be witnessed on these rugged peaks and stacks and cliffs!

Scattered thinly here and there amongst the cloud of fluttering Fulmars, the observer will sometimes notice one or two birds much darker in colour than the rest. If he studies the birds more closely he will also discover that in both this light and dark race of Fulmar a large and small form occurs. Some naturalists assert that these darker birds are the young—a statement which I from personal observation most flatly deny; and that the large and small forms only represent the local variation in size to which each and every species is subject more or less. This again is wrong, as I have obtained several of the eggs of this small form of Fulmar, which is well known to the St. Kildans, who, like the excellent field naturalists they are, were very careful to inform me of the fact. It is not much to the credit of British ornithologists

that this interesting question has not been satisfactorily solved long ago. Where are our Watertons and Whites, our Stricklands and Montagus nowadays? Has the pedantic professor entirely taken their place? Have the field naturalists of old degenerated into the carpet professors of to-day? who from their easy-chairs at home write wise treatises on the habits of birds they have never seen, and draw their stock of information from the observations of those who lovingly sought it in the wilderness, without having the grace, the fairness, or the honesty to acknowledge the source of its supply! Verily at the present time book-breeding is a science, and literary kleptomania attains the dignity of a fine art!



THE FORK-TAILED PETREL.

THE STORMY PETREL AND FORK-TAILED PETREL

(*Procellaria pelagica* and *P. leachi*)

THE Stormy Petrel is specially interesting as being the smallest web-footed bird known to naturalists. Like all its congeners it is a bird of the wide rolling sea, only coming to land to rear its young, or when driven in by an unusually severe gale. At sea the habits of this little fowl are very interesting. It loves the stormy waves, and flits lightly over the billows, never seeming to tire or to heed the rough weather. You may watch it course round the vessel, now high in air on fluttering wing, then skimming just above the big waves, descending deep down into their trough, or mounting lightly up their glassy sides and disappearing over their foaming crests into those beyond. Every now and then it stretches out its legs and seems to patter along the smooth surface of the mighty rollers, and often pauses with wings held

high above its back to pick up any scrap of food floating on the sea. It is more or less gregarious at all seasons, and generally flies over the water in little scattered parties. It flies by day as well as by night, but seems to become most active at the approach of darkness, and is never seen about its nesting-place till dusk is falling.

Many of these Petrels are caught in the flight-nets of the Wash; and I have on more than one occasion seen this bird flying over the fishermen's houses in early morning, after a more than usually boisterous night, about the period of the autumnal equinox. It is indeed marvellous how this little bird can stand against the tempest; and when the breeze freshens it seems to take increased delight in following the outline of the enormous waves. It is very possible that its habit of keeping close to the waves is the secret of its safety, for it finds considerable shelter from the wind in the deep hollows and behind the towering crests. Except at the nesting-place it seldom utters a sound, but there its noisy twittering may be heard on every side, and from the ground in which it nests. The food of the Stormy Petrel is composed of small cuttlefish, oil floating on the waves, and any scraps of fatty refuse thrown from passing vessels. I remember on one occasion to have come across a party of these birds eagerly feeding on a quantity of floating oil which thickly strewn the sea under the cliffs. It had come from a cask which had probably fallen overboard from some ship and been dashed to pieces against the rocks.

The Stormy Petrel visits the land in June for the purpose of rearing its young. In some places, as for instance at St. Kilda, I am of opinion that this bird uses its hole as a retreat in the daytime for the best part of the year, as the Shearwater does. The natives of these islands told me that the Stormy Petrel was one of the first birds to arrive in spring and left amongst the last in autumn: this means that the

bird is practically a resident there, for the St. Kildans never think of searching for such an insignificant little creature as the Stormy Petrel when once the big sea-birds have taken their departure. This bird most probably pairs for life, and its scanty nest of a few bits of dry grass is usually placed in an old Puffin burrow or a rabbit-hole. Sometimes it lays its eggs under heaps of stones like the Wheatear, or in crevices and holes of walls and other masonry. The egg, for but one is laid, is white, without any gloss, finely sprinkled with minute red spots, which usually form an indistinct zone round the larger end. The birds keep very close during the day, but at dusk hurry out to sea, fluttering about over the rough ground and far out on to the water in a very moth-like manner. The Stormy Petrel only rears one young bird in the season; but if its egg is taken it always lays again, sometimes several in succession, so that the breeding season is prolonged in many places even into the autumn.

The Fork-tailed Petrel is nearly twice the size of the Stormy Petrel, and differs further in having a forked instead of an even tail. This little bird escaped the notice of naturalists until comparatively recent times—possibly it was confused with its smaller relation. The isolated position of its breeding-place at St. Kilda, seldom visited by the naturalist, was another cause of its remaining so long undetermined. Practically the Fork-tailed Petrel was discovered at St. Kilda ninety years ago; and it still continues to haunt those remote islands, and to this day breeds there in abundance. I have met with this interesting species in many of its haunts, but my stay on St. Kilda gave me an unusual opportunity of making myself thoroughly acquainted with its habits and economy.

The grand headquarters of the Fork-tailed Petrel at St. Kilda are on Soay; but an extensive colony exists on the precipitous island of Doon. This island is a long, narrow

strip of rocks and grassy downs, and forms the southern horn of the Bay of St. Kilda. It has evidently at no very remote date been joined to the mainland of St. Kilda, and may even be reached without a boat at dead low-water during exceptionally low tides. It is very steep and covered with rich grazing grass over most of its surface; but the cliffs on the south side facing the Atlantic are very grand and rugged, though not very steep. At the extreme easterly point of the island it narrows considerably, and there is little but bare and lofty rocks towering up in fantastic rugged peaks like ruined towers and battlements. We have already seen how this curious-looking island is literally honeycombed by Puffins, and how densely the cliffs are tenanted with Guillemots, Razorbills, and Kittiwakes. Now we notice the Fulmar in considerable abundance, and the Great Black-backed Gull—the hated “Farspach” of the St. Kildans,—the largest of its order, is common. Here and there the St. Kilda Wren chants cheerily from the rocks, and a pair of Peregrine Falcons sail round and round the loftiest peak.

But we dismiss these birds with casual glances and confine our attention to the Fork-tailed Petrels. Not one of these birds can be seen though. As soon as we landed on the rocky shore and climbed barefooted up the cliffs and steep grassy downs, the Puffins rose into the air like swarms of bees, but not a Petrel mingled with them. We bent our steps to the grassy summit of the island, where the colony of Petrels was established. Here the ground was full of long, winding burrows—evidently disused Puffin’s and Shearwater’s nesting places, and in these the Fork-tailed Petrels had made their homes. Placing my arm to the full extremity of one of these holes, I felt a little bird fluttering over its nest, and drew out a Fork-tailed Petrel. It was sitting on a single egg and uttered a few squeaking notes of remonstrance at the rude disturbance. When held in the hand it emitted

a quantity of oil like that ejected by the Fulmar. Most of this oil comes from the mouth, but a little oozes from the tubular nostrils. We discovered nest after nest of this bird, all in the holes. In two holes we found a bird but no egg; they had probably gone into this retreat to pass the hours of daylight, or they had not yet commenced laying. In one hole there was an egg and no bird; but I believe the Petrel escaped by another of the several entrances. I never found more than one bird on the nest. The nests vary a good deal in size, some being composed of several handfuls of material, others of only a few straws, whilst in one case no nest at all had been made, and the egg lay on the bare ground. They are made of dry grass, a scrap or two of moss, rootlets, and a few bits of lichen from the rocks. The holes varied considerably in length, some being only two feet, others as many as five feet; but as they are made in soft peaty soil it is a very easy task to unearth the nest. In some cases the hole had several entrances, and then I found it necessary to stop all up but one before beginning to dig out the nest, thus preventing the parent from escaping until I had examined her. I here observed that the holes which contained Petrels' nests had a little dry grass at the entrance. Many nests are placed close together—an underground colony in fact—and I found half a dozen within a radius of eight or nine yards. When the little captive Petrels were released, they flew about for a few moments in a very erratic manner, as if dazed by the light, and then darted off. Some flew round and round with rapid beats of their long wings, very much like a Swallow or a Swift, and finally disappeared far out to sea behind the distant rocks.

The Fork-tailed Petrel lays only one egg, which differs little save in size from that of the Stormy Petrel. Perhaps the fine markings are a little larger and more decided, and the egg is half as big again as that of the smaller species.

The shell is without any polish and very chalky in texture ; and I would give a word of caution to the collector in handling them, for they are fragile in the extreme. Both birds take it in turns in incubating the egg, and when the young chick is hatched both attend it with unceasing care. In their habits the Fork-tailed Petrels turn night into day—not a bird stirs from its nest till dusk, then their fluttering forms may be observed flitting to and fro in the gloom, and you can stand upon the beach and see them start out to sea.

After leaving the Fork-tailed Petrels one of the St. Kildans snared a quantity of Puffins with his long rod, and we gathered half a boat-load of Razorbill's, Guillemot's, and Gull's eggs from the cliffs ere returning to the slippery landing-place. In its actions on the water the Fork-tailed Petrel does not differ much from its smaller congener. I would here, however, correct a slight error which has most unaccountably crept into the records of this bird's habits. It is said that this Petrel can only rise from dry land with difficulty ; but the birds I observed on St. Kilda and on the coasts of the Wash rose quickly from the earth with very little effort. During autumn numbers of Fork-tailed Petrels are snared on the Wash ; but it is only the roughest weather that causes this bird to seek the land. I do not think its food differs in any important particular from that of the Stormy Petrel ; and like that bird it is a constant attendant on ships, running up and down the big waves, aided by its wings. It does not seem quite so gregarious as its smaller ally either at sea or at its breeding grounds.

GEESE

(*Anser cinereus*, etc.)

WILD GEESE are more numerous in winter on many coasts than any other birds, yet curiously enough only one of the half-dozen species that regularly visit the British Islands is a resident in the country. They are all arctic birds, frequenting the wild moors and heaths and tundras of the polar regions, where they rear their young, but are driven south at the approach of winter. The ornithologist may meet with all these British Wild Geese in various haunts during the autumn and winter months. Many of these birds frequent our inland districts, feeding during the daytime on the broad brown stubbles and retiring to the meres and lakes to sleep. Others keep to the coast, especially where the shore of the shallow sea is one vast expanse of mud and salt-marsh, and studded with low sandbanks even at high water. In the latter locality the Brent Goose (*Anser brenta*), distinguished by its black forehead, throat, and breast, may usually be found between October and March congregating in enormous flocks on the mudflats, where it feeds on the grass wrack. Flocks of the much smaller Barnacle Goose (*Anser leucopsis*), distinguished by its white forehead and cheeks, frequent the same localities, but prefer to feed on the grass by the banks of rivers, coming inshore at stated intervals and returning to the flat banks of mud to sleep, where a good look-out can be kept on every

side. I often watch the countless thousands of these birds on the low shores of the Wash. They are extremely wary and cautious, and take wing long before the observer is anywhere near them. It is a grand impressive sight to watch these big birds rise in one dense cloud with much confusion of wings, and fly close above the water to a distant part of the coast. For the moment it seems as if the very mudbank was rising into the air. Their noisy clamour, loud as the braying of a hundred trumpets, comes echoing over the wide expanse of mud, as the birds stand on the banks and preen their feathers. What a sense of life these birds give to the shore! How exciting and interesting to watch the masses of birds busy feeding, or perhaps standing fast asleep! There are always several birds, however, on the look-out, watchful sentinels over the sleeping company, and ready to sound the warning note at the least alarm, which usually sends most of the old birds off at once—the young and less experienced allowing a much nearer approach. I have sometimes seen a flock of Brent Geese sleeping on the sea some distance from land, but in every case one or two birds were always awake, and on the alert for danger. In many localities these birds only come inshore to feed at low water, when the tide has left the mudbanks bare, on which their favourite grass is abundant. Here they come, as soon as any of the bank is visible, remaining until the last bit is covered again with the rising tide.

The Pink-footed Goose (*Anser brachyrhynchus*), distinguished by its flesh-coloured legs and feet, and yellow bill with dark base and nail, and the Bean Goose (*Anser scgetum*), characterised by its orange-yellow legs and feet, and yellow bill with dark base and nail, also visit us every winter in enormous numbers; but they are very different in their habits, and love to frequent the stubbles and fields of autumn-sown grain. They resort by choice to the largest fields, and usually keep

far away from the hedges and dykes that surround them. Geese are for the most part day-feeders, and live principally on vegetables and grain, so that at the approach of evening the flocks gather together from the fields and repair to the distant coast to sleep on some low island or mudbank. When the moon shines brightly the flocks of sleeping Geese look wonderfully pretty and interesting, but amongst the dark-looking mass of birds there are always to be seen some moving about or uttering their unmistakable cries. In smaller numbers the White-fronted Goose (*Anser albifrons*), readily distinguished by the numerous black markings on the under-parts, uniform yellow bill, white line round the forehead, and yellow legs and feet, visits us every winter, but it is much more locally dispersed, and rarely congregates into such vast companies as the birds we have already noticed.

The last species, at whose habits we will briefly glance, is to the naturalist by far the most interesting. This is the Gray-Lag Goose (*Anser cinereus*), pre-eminently the "Wild Goose" of this country. It is characterised by its flesh-coloured legs, feet, and beak, and few black markings on the under-parts. To this bird we are indebted for the domestic Goose, so familiar an object in every farmyard. From the Gray-Lag the various strains and varieties of the farmyard Goose have sprung—domestication having even changed the colour of its plumage to pure white. The Gray-Lag Goose is a resident in our islands. It is also much more of an inland bird, and used formerly to breed in abundance in the marshes of the low-lying counties, until drainage brought these districts under the plough. In winter it frequents the coast in large numbers, but returns to its marshy moorland haunts in early spring, for the purpose of rearing its young. Flocks of these birds may often be seen on their journeys to and fro, flying at an enormous height in the shape of the letter V.

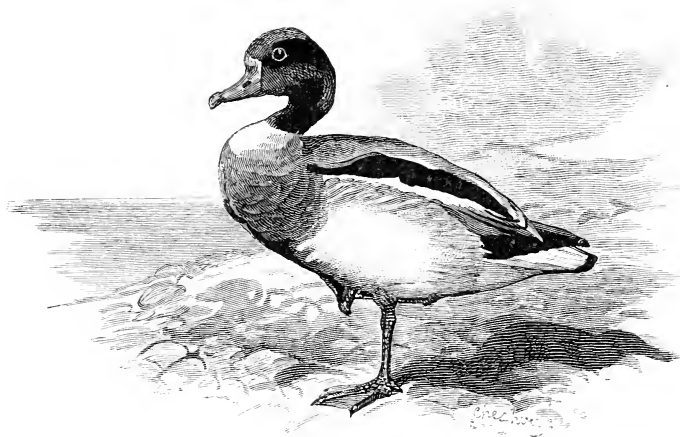
When observing bird-life amongst the wild Hebrides I often

came across this interesting bird, and its cries may be repeatedly heard from all the wildest and most secluded portions of this wilderness of marsh and moor, rock and water. Its food is principally grass. It may be seen on the downs and by the sides of the little pools eagerly grazing; but in autumn it frequents the stubbles to pick up the grain. In the autumn months the Gray-Lag Goose rarely sleeps on the sea, but retires to some desolate, low island for the purpose; and during the breeding season the male seldom strays far from the neighbourhood of the nest, where he stands ready to defend his mate and her charge. At all times of the year this bird is more or less gregarious, but it rarely flocks with other species, although in many parts of the Highlands tame Geese and their wild relations may be seen feeding on the stubbles together. They are remarkably noisy birds, and their loud chorus of *gag-gag* is commenced at the least alarm or excitement.

The Gray-Lag Goose may probably pair for life, and returns with its mate to the chosen nesting-ground early in spring. It is a rather early breeder, and I have taken its eggs by the end of April. The nest is built amongst the tall heath, or in the reeds and rushes on the marshy ground, and is a somewhat conspicuous object, made of the dead branches of the heather, rushes, bracken, and turf, and lined with down and feathers plucked from the body of the female. In this structure she lays half a dozen big white eggs, resembling those of the domestic Goose in every particular, but perhaps on an average they are a little smaller. During the whole period of incubation the gander keeps at hand to beat off any marauding bird or animal. Only one brood is reared in the season, and as soon as the young are sufficiently fledged the old birds lead them to the sea.

At the end of summer a most interesting event takes place. The old birds begin to moult their plumage, the wing-

feathers being changed almost the last of all. These quillfeathers, curiously enough, drop out very rapidly, so that for a short time the birds are quite unable to fly. Knowing their helplessness full well, they are now wary in the extreme, and spend most of their time in the water, keeping far away from shore, only venturing to land at irregular intervals to feed—at dusk when all is quiet, or in early morning. Even then they never stray far from the water, and the instant danger threatens they seek refuge in that element, running with great speed to the shore, and swimming quickly out into the open sea or lake. During the whole breeding season flocks of Gray-Lag Geese may often be seen, both at sea and on the moors and marshes. These birds are young ones hatched the previous season, and not yet old enough to breed; but when the autumn comes they unite with the older birds and their broods, and keep in company through the winter. At this season the Gray-Lag Goose wanders far from its usual haunts, soaring into the highest air, and winging its way to distant coasts or inland districts where it can find seclusion and food.



THE SHELDRAKE

(*Tadorna cornuta*)

CONTRARY to the majority of our British Ducks, the Sheldrake is a resident on the coasts throughout the year. It may very justly be called a true Sea Duck—obtaining its sustenance from the sands and mudflats of the ocean in summer and winter alike, and rearing its young but a short distance from the ever-troubled waves. Most Ducks only seek the coast in winter, when their favourite inland pastures are sealed with ice and snow, but the Sheldrake remains there throughout the year. Its numbers are increased in autumn by birds from arctic regions, but these return with the sun in his northern journey. Owing to the nature of its food and the method of obtaining it, the Sheldrake only frequents certain parts of the coast. Low sandy beaches, estuaries, and mudbanks are its favourite haunts—on the wide extensive wastes, where its shy wary nature renders it perhaps the most difficult bird to approach. Long

before the other wild-fowl with which it often associates in the winter have taken alarm, the Sheldrakes are off to safer quarters—even the young and inexperienced birds exhibiting a shyness and wariness rarely indeed equalled by any other wild bird.

I will ask the reader to stray with me this wintery morning on to the broad expanse of sand and mudflat, and make the acquaintance of this charming bird—the handsomest of all our native Ducks. The ground affords no cover—all is one far-expanding waste, smooth and even; not a rock in sight, or any hiding-place which might afford us the unusual opportunity of approaching the birds and watching their movements closely. A small party of birds are feeding close to the water's edge. Cast your field-glass in their direction, and you can detect a few old Sheldrakes amongst the flock. Observe how they wade into the shallows and receding waves, exploring the mud with their bills for food, or confining their search to the little pools which the tide is leaving on every side. Now you see them turn over and reach down into the water, their tails high up in the air like the Mallard, but they never dive for food. The food of the Sheldrake is composed partly of vegetable and partly of animal substances. It feeds on the stems and leaves of various plants growing in and near the water, especially grass. Insects are eaten, as well as small crustaceans, worms, and even small fish. The bird is also extremely partial to the various small mollusks with which the sandy coasts abound. As I previously stated, the least alarm sends the Sheldrakes hurrying away to more secluded haunts. They pass in straight and regular flight over the sea, perhaps not to alight again for miles; and very beautiful and conspicuous objects they look as their wings are beaten up and down, not quickly as most other Ducks do, but in slow regular order, more like a Heron. When on migration

the Sheldrake flies high, and usually moves from one country to another under the cover of night.

If the Sheldrake is a resident on the coast, the observer will find that the bird changes its haunt a good deal with the season. In some localities these birds are very rarely seen during the winter, but make their appearance at the breeding-places during the second week in March, quitting them again as soon as the young can fly. The breeding grounds of the Sheldrake are near the sea, either on the mainland, or the low sandy islets near the shore. You may find numbers of these beautiful birds breeding on Holy Island and in the small sandy islets in the Firth of Forth. Then, too, the bird is of frequent occurrence during the breeding season amongst the sand-hills or "links" between Holy Island and the little fishing-village of Sea-Houses. Amongst these "links" the bird finds a secluded home, yet from its shy and retiring habits it is always liable to be overlooked and thought to be much rarer than it really is. The Sheldrake is comparatively an early breeder, nesting duties commencing in the beginning of May. The birds undoubtedly pair for life. At all seasons they fly in pairs, like the Mallard, and I have cause to know that in some cases at least the old nesting-place is annually tenanted. They are not gregarious during the nesting season, each pair living apart and comparatively isolated, even where the birds are numerous. The site for the nest is always a covered one—a burrow in the sand being the usual situation, and a rabbit-hole is often chosen. Indeed, I very much doubt if the Sheldrake ever excavates a hole for itself. Some of our learned masters in ornithology would have us believe that the Sheldrake often rears its young in holes made by badgers and foxes, and that these poultry-loving animals share their burrows with this duck. Could anything more improbable be conceived? But after all, continental foxes may not have

that yearning for Duck's flesh which is such a characteristic of our sly reynard. At the bottom of the hole, which is often winding, and extends six feet or more, the nest is formed. As may be conjectured it is not an elaborate structure, being but a few straws and dried grasses, lined with the soft gray down from the old bird's body. The eggs are from six to twelve in number, creamy-white, with a reddish tinge before they are blown. Their extreme fragility demands the most careful usage, the shell being thin and brittle and possessing a considerable amount of gloss. The Sheldrake's nest is one of the most difficult to find—the best plan being to watch the ducks at morning and evening, when the sitting-bird is relieved by its mate. The male is rarely seen near the nest, except when about to take his turn upon the eggs; and during the whole period of incubation the birds do little to betray the whereabouts of their home. Another very interesting feature in the economy of the Sheldrake is the fact that the *male* bird assists in hatching the eggs. Now in all our Ducks where the sexes are different in colour, as is the case with the Wild Duck, for instance, the female is entrusted with the entire care of the eggs. With the Sheldrake, however, the case is different, the male bird assisting in incubation simply because his conspicuous plumage is effectually hidden from view.

There is another matter worthy of our notice, and which deserves a few passing remarks. The subject to which I allude is the presence of down in the nests of this family of birds. What is its use? It is popularly believed to afford warmth to the eggs, which is not at all improbable; but then no end is served by this artificial heat, for the eggs of the Sheldrake and of all other Ducks will hatch just as safely and surely in a nest containing not a particle of down. The presence of down in the nests of the Ducks is evidently for purposes of concealment; and the fact that it is found in the

nests of those Ducks breeding in holes and where it is not required, seems to me to point to the common origin of this group of birds, the habit being inherited and retained in all cases, even though, from a variety of causes, as, for instance, with the Sheldrake, it has long ceased to be of any service. The Sheldrake, impelled by the subtle laws of inheritance, covers its eggs when it leaves them, simply because it was the habit of its ancestors to do so—a habit which has been transmitted to posterity, in some cases uselessly, as the present species beyond all doubt demonstrates.

The Sheldrake only rears one brood in the year, and the young ducklings leave the nesting-hole soon after they are hatched. Amusing little creatures they are, wonderfully quick in all their movements; and should you chance to suddenly disturb a brood, they instantly scatter like young Lapwings, and crouch to the ground. Here, motionless as marble, their downy covering so closely harmonises with the sandy wastes as to hide them effectually from view. The young birds feed almost exclusively on sand-hoppers, which they are able to catch for themselves very adroitly, soon after they leave the shell. You rarely indeed observe the Sheldrake far from the sea. It may sometimes wander to the green grassy banks amongst the sand-hills, or even to the open pastures at the top of the dunes, but the water and the beach is its true element. Before the young birds can fly the brood and their parents may be observed far out at sea, coming to the land to feed, but not always to sleep.

THE WILD DUCK

(*Anas boschas*)

MAN'S triumphs over the wilds, his agricultural improvements, his drainage, and his railways, have robbed many a shy and handsome bird of its home ; and undoubtedly to this cause must we attribute the Wild Duck's comparative rarity now, compared with the times, even within the memory of living man, when it was perhaps the commonest and most widespread species of waterfowl to be met with in this country. The glory of most of the decoys has departed—they have seen their best days ; farms and broad acres have taken the place of lakes and marshes, and, like wrecks high and dry upon the beach, these decoys are the sole surviving monument to the Wild Duck's former abundance. It has deserted many of its old familiar haunts, and none but the naturalist regrets the change. Marsh after marsh and mere after mere have disappeared, and with their drainage the wild birds have departed to wilder and more secluded scenes. In spite of all, however, the Wild Duck is still far from being a rare bird, and its habits may be studied in many localities which still retain their primeval charm. Its haunts are varied ones, but they change a good deal with the revolving seasons, and embrace almost every description of scenery. You may find him on the fenny lands and marshes of the low-lying districts, the scattered reed-encircled pools on the upland moors, the mountain-lakes, and the sequestered fish-ponds and ornamental

waters. You may flush him from the little rush-fringed pools on the heathy commons, or amongst the open spaces near the borders of the grand old forests. While yet again, the sluices, dykes, and drains near the low coasts, and the mudflats laid bare by the receding tide, are also his favourite haunts according to the season of the year.

Many Wild Ducks are resident on our shores, but their numbers are considerably increased soon after the autumnal equinox. Shy, indeed, and wariness personified, is this handsome bird, and it is only by exercising the greatest caution that you are enabled to observe its varied movements on the land and water. Here, for instance, is a secluded lake, on which the Wild Ducks are engaged in feeding or dozing away the few short sunny hours of this December morning. Thanks to the clumps of hollies and the tall withered reeds and flags, we are enabled to approach the birds closely as they float all unconscious of our presence on the shallows. Silent birds they are, and the lap, lap of the waves against the boat house, and the rustling of the dead rushes in the breeze, are the only sounds that break an almost oppressive stillness. What an interesting and animating scene though! On a mass of floating reeds a few yards from shore a fine old drake is seated, preening his charming dress, which glows with pristine beauty in the sun. On the water close by, the duck is floating listlessly and quite ignorant of our presence. Several other birds are paddling about a little distance farther on, swimming here and there, or rocking motionless on the tiny waves. In the shallows, where the cattle come to drink, are a few more ducks and drakes, sifting the soft mud at the bottom of the water, or swimming out from shore to turn upside down, their tails only visible above the surface. But the birds do not feed much now; they are most active at dusk and during the night. Suddenly one of the drakes darts towards a rival; a chase begins both on and under the surface of the water;

and finally the whole party of birds are sporting and splashing in the pool seemingly for very amusement. The excitement ceases as suddenly as it commenced. Some horses are being brought to drink, and the whole flock of birds close up into a compact party and float gradually from shore to the centre of the lake, where danger is avoided and the approach of enemies defied. Although the birds may seem utterly regardless of danger, they are ever on the watch, and the slightest alarm instantly sends them off to much safer quarters. You not unfrequently disturb a pair of these birds from the smallest pools, especially during winter, and their hurried departure from the reeds almost startles you as much as your presence alarmed them. When approached suddenly the Wild Duck instantly prepares for flight. It cannot rise for a few moments, but flaps hastily along the surface of the water, often quacking loudly until it gets well upon the wing. Few birds fly more rapidly than the Wild Duck, its quickly moving wings bearing it along with great speed and making a loud noise. These birds are much attached to a chosen haunt, and return in spite of continual disturbance. When a pair of birds rise from a pool you will notice that the duck is the first to take wing, the drake gallantly waiting until his mate has well begun her flight before he follows her.

The habits of the Wild Duck may also be studied to advantage by any one whose fancy leads him to the coast during the winter months. Then the birds sometimes congregate with other Ducks—the Wigeon, the Teal, and the Garganey, —and frequent the mudflats at low water, and the brackish pools and streams near the coast, often wading and swimming up the latter for miles. Streams too are visited, especially in a long-continued frost, the running water rarely freezing, and thus allowing the birds to seek for their food. I am of opinion that the Wild Duck seeks the shore itself more from necessity than choice, and always prefers fresh to salt water.

Like most wild-fowl the Wild Duck is particularly lively at night, and searches for most of its food under the cover of darkness. It always prefers to migrate, and even to wander from one distant sheet of water to another by night.

Although the Wild Duck may be found on the coast for several months in the year, it always prefers an inland site for its nest. It breeds near the fresh water, even if the loch or pool of its choice be but a short distance from the sea. I am of opinion that the Wild Duck pairs for life. At all seasons the birds may be observed in pairs, and marks of affection are continually passing between them. In winter, when the Wild Duck is gregarious, they fly in pairs—that is to say, the *old* birds; in autumn, before they quit their upland haunts, I also see them in pairs; and when the presence of spring is visible on every side, they may invariably be observed in pairs. The young or single birds pair in the early months—a union which is only broken by death.

The Wild Duck is an early breeder, preparations for the eggs being made in the beginning of April; but many birds, especially in the north, delay their operations until May. The nesting site is a varied one. Although the bird is so closely associated with the waters, its nest is by no means always near them; and what is stranger still, the bird occasionally hatches her eggs in holes in trees, in boathouses, and even in the deserted nest of a Crow or a Rook. When placed near the water it is usually among reeds, tall grass, or other coarse vegetation; but when in holes or other sheltered situations little provision is made for the eggs. Very often the bird lays her eggs a mile or more from the water, amongst heath or under a stunted bush. Here, for instance, on this wild common, bordering the forest, studded with clumps of thorn trees and clothed with a luxuriant growth of heath and bracken, now dry and withered and broken to the ground, save where an unusually thick mass stands upright, a pair of

Wild Ducks are nesting. Under one of the clumps of bracken the female has made her home. She watches us anxiously as we approach, and when her nest is almost at our feet she hurries quickly away, flapping just above the ground, and hiding herself amongst a distant group of white-thorns. She displays no alluring motions, nor does she utter a sound as she quits her charge. Let us examine her cradle. It is indeed a beautiful structure, and claims our warmest admiration. In the first place a hole has been scraped in the ground to the depth of several inches. The materials of the nest consist of the fronds of the bracken growing so profusely near, and a quantity of the mother-bird's soft plumage is studded here and there amongst it, giving the structure a very speckled appearance. It is lined with down and feathers, amongst which the twelve eggs are snugly placed. In some nests as many as sixteen may be found, whilst others contain only eight or ten. They are very similar to the eggs of the domestic Duck, but are a little smaller, being pale greenish-yellow, without a marking of any kind.

I have seen many nests of this bird built on the bare ground under heather and furze on small islands; and in some cases you may find two or three nests within a few yards of each other. When the old bird leaves her nest to feed, she carefully covers her eggs with moss and down, or bits of vegetation growing near. The eggs are covered long before the bird begins to sit, and when no warmth is required—another clear proof, by the way, that this careful proceeding is for concealment alone. The Wild Duck only rears one brood in the season. The drake is rarely seen in the neighbourhood of the nest, or in company of the duck at all after she has begun to sit. His showy plumage is probably the cause of his apparent neglect, the female's dress being beautifully protective amongst the haunts she frequents. When the eggs are laid in elevated nests the mother-bird conveys the duck-

lings one by one to the ground in her beak ; and it is not improbable that they are always thus conveyed to the water, should it be at any considerable distance from their birth-place. When on the water the little creatures are lively enough and dive at the approach of danger ; but here they have many enemies, and the hungry Hawks and Crows will often snatch them from the mother's side without her showing any sign of resistance. The duck often leads her brood to the tiny streamlets, and when surprised in such a place she shows no anxiety whatever for her own safety, but flutters and drags herself along the ground almost at your very feet, full of distress for her helpless little ones. These little ducklings are wonderfully wary, and hide themselves under the banks and amongst the grass and heather the moment they are disturbed by the warning note of their mother.

The food of the Wild Duck is partly composed of animal and partly of vegetable substances. In autumn I have known the bird feed on the stubbles ; seeds and roots of various plants growing in or near the water are also eaten. Then, too, it catches the various small fishes in the shallows, and is extremely fond of frogs, worms, and slugs ; and the minute animal-life lurking amongst the mud of ponds and rivers is also sought after, the bird's peculiar laminated beak being eminently adapted to such a mode of feeding. Wild Ducks are also expert "flycatchers," and whilst floating on the waters often snap at passing insects.

It needs not the eyes of Argus to determine that the Wild Duck is the species from which our domestic birds have descended. Man's constant care and selection have increased their size, but enfeebled their wings, and their easy conditions of life under domestication have caused much diversity in their plumage, by letting the tendency to variation extend in many directions, and thus produce by intermarriage all those various tints which now adorn them in the poultry-yards of

man. Tame birds, however, frequently revert to the colour of their wild congeners, and resemble them so closely in every respect that distinction is almost impossible. I can speak thus from experience, for memory gently reminds me that I once shot a tame Duck by mistake on the coast at Flamborough—an unpardonable blunder which never dawned upon me until I was accosted by an old country dame, who inquired if I had met with a brace of her missing ducks during my ramble under the cliffs, and who eyed my trophy suspiciously, although she never claimed what was undoubtedly her lawful property!

A word as to the singular change of plumage the Wild Duck undergoes every summer. For a brief period every year the drake loses his brilliant dress and assumes a plumage very similar to that of the female. This change takes place as soon as the duck begins to sit, making itself first apparent on the breast and back. Almost daily a great change may be noticed—the showy plumes drop out and are replaced by brown ones; until in the brief space of a month he resembles his mate externally in almost every particular. He remains like this a week or so, but by the early autumn he has once more changed his brown plumage for his usual brilliant attire. Most other species of Ducks, by the way, go through a similar change. Some naturalists are of opinion that this brown plumage is assumed for the purpose of protecting the showy drake while he moults his quills; but I am convinced, after paying much attention to the subject, that this change of plumage is the last remnant of what was once a regular winter plumage, and that this partial moult in summer may eventually be entirely dispensed with, as in the more highly specialised Geese and Swans.

Owing to the protection afforded to them by man, there are several other species of Ducks which continue to breed in suitable haunts, where they are guarded from disturbance

almost as jealously as game. This is fortunate for the naturalist, who thus has an opportunity of studying the nesting economy of many of our rarer birds. Five of these species belong to that division of the British Ducks of which the Mallard is the typical species—namely, the non-diving Ducks. The first of these is the Pintail (*Anas acuta*), distinguished by its long central tail-feathers, vermiculated mantle, and white upper breast. Though best known as a winter visitor to our islands, a few pairs remain behind in Ireland to breed. In winter it is a bird of the coast, feeding on mudflats and shallows; but in summer it retires to the pools and lakes of the uplands, on the banks of which it makes its nest. This is composed of dry grass and other aquatic herbage, plentifully lined with down. The eggs, from seven to ten in number, are pale buffish-green, very similar to those of the Wild Duck. Its food is insects, mollusks, grass, and water weeds, and in autumn sometimes grain.

The Wigeon (*Anas penelope*) comes next under our notice. It is characterised by its vermiculated mantle and white median wing-coverts. Few Ducks are better known than the Wigeon. It swarms on our coasts in winter, as well as on more inland waters and marshes; but at the approach of summer nearly all these birds return to the arctic regions to breed. A few pairs, however, remain behind in the northern parts of Scotland, and make their nests on the marshy borders of the mountain forests and the uplands, where pools and streams are plentiful. The nest of this bird is slight, but warmly lined with down, which is easily recognised by its dark brown colour and distinct white tips. The eggs are from seven to twelve in number and buffish-white. The female performs the entire task of hatching the eggs and caring for the young. The food of the Wigeon is similar to that of the Pintail, and the bird's loud whistling

note of *whce-ow* is very characteristic. Great numbers of this pretty Duck are caught in the flight-nets on the Wash in autumn.

The Teal (*Anas crecca*), next to the Wild Duck, is perhaps the best known of all the British species of Ducks. Its small size, vermiculated mantle, and green bands on the sides of the neck, readily distinguish it from its congeners. The Teal, if the smallest, is certainly one of the handsomest of our resident birds. Wherever the country is suited to its requirements, the Teal is more or less commonly distributed. It loves to frequent the little reed-fringed ponds and meres, and does not visit the coast so much as its larger allies. Its well-known *nake* and shrill whistling *rick* often proclaim its presence amongst the reeds. The nesting season begins in the late spring, and the eggs are often laid some considerable distance from the water's edge. I have known the nest in amongst brambles and under bracken, as well as in the reeds and rushes on the banks of the quiet pool. Few birds are so gentle and trustful as the charming little Teal, and its actions may be viewed with little trouble. The nest is slight, made of a few bits of dry grass, fern, or aquatic herbage, lined with the uniform brown-down from the parent's body. The eggs, eight to ten in number, are cream colour, sometimes tinged with green. It has been said that the male Teal assists the female in family duties, but so far as I have observed, this species does not differ from its congeners in this particular.

The Garganey (*Anas circia*) is one of the most local of British Ducks, and is only known with certainty to breed in one of our eastern English counties. It is distinguished from its congeners by its blue shoulders and unvermiculated mantle. The drainage of fens and marshes has robbed the Garganey of nearly all its nesting-places in England. Like the Teal it is remarkably trustful and tame, but when alarmed

flies off in a very rapid manner. Its notes are similar to those of the Teal, and it feeds on much the same substances. It is a late breeder, the eggs seldom being laid before May. Water is by no means essential to the nesting-place of this pretty bird. Sometimes the nest is made near the water, amongst the surrounding vegetation ; but as often as not it is situated far from the pool on a moor, amongst heather and brushwood. The eggs are from eight to twelve in number, yellowish-white in colour, and undistinguishable from those of the Teal. The down in the nest, however, will readily identify them. It is brown with long white tips. The female performs the task of incubation, and also brings up the brood.

Our last species in this group is the Shoveller (*Anas clypeata*), a species which is easily identified by its wide spoon-shaped bill and blue shoulders. Best known as a winter migrant, many birds remain behind to breed in localities suited to their needs. Quietness and freedom from molestation are the chief requirements. Broads and lakes, reed-fringed ponds, surrounded by broken forest country, and pools with muddy shallows, in which there is an abundance of water weed, are the Shoveller's favourite haunt in summer, but in winter it often visits the mudflats. Its food, and the manner in which it is obtained, does not differ from that of its allies. It is more of a wary bird than a shy one, and manages to keep well out from shore, where it may often be seen calmly floating, either fast asleep or preening its handsome plumage. Its alarm-note is almost as loud as that of the Wild Duck, and when flying up from the water it utters a grunting noise. The Shoveller makes its scanty nest on the ground amongst the vegetation of its haunts, sometimes far from the water, at others on the bank. The eggs are laid in May, and are from six to ten in number, buffish-white tinged with green. The down in which they snugly rest is dark

gray, conspicuously tipped with white. The female alone takes all charge of the eggs and young.

Our last two species belong to the division of the diving Ducks, in which the hind toe is furnished with a lobe. The Pochard (*Fuligula ferina*), with his bright chestnut head and neck, and white lower-back vermiculated with black, is a well-known bird on British coasts, especially in winter. Some of these birds remain to breed, and the nest has been obtained in many parts of the country. The favourite summer haunts of the Pochard are the quiet, strictly preserved sheets of water, broads, and ponds, surrounded by flags and rushes, horse-tail reeds, and other aquatic verdure. It also loves to frequent the clear deep pools in the open parts of forest country on heaths. In winter the Pochard is more evenly distributed along the coast, where its habits are very similar to the allied species. It is a rather late breeder, making its nest amongst the flags and rushes, or in the dense herbage near the shore. The nest is composed of dead reeds and rushes, the leaves of flags and dry grass, lined with the bird's own down. The eggs are from eight to twelve in number, and pale brownish-green in colour. The down resembles that of the Wild Duck, having no white tips, but dull white centres to the tufts. The Pochard is an expert diver, and obtains most of its food at the bottom of the water, pulling up the weeds that grow there; it also feeds on mollusks and insects. It rises with loud whirr of wing, flies rapidly, uttering a harsh cry as it leaves the water; but the usual call-note is a shrill whistle.

Closely resembling the Pochard in all its habits and economy, the Tufted Duck (*Fuligula cristata*) is another species that breeds regularly, yet locally and sparingly, in England. Its handsome crest is a distinguishing character of the species. The favourite summer quarters of this bird are amongst the lakes and pools and streams that stud the

charming country of the "dukeries" near Sherwood Forest, in Nottinghamshire. The Tufted Duck makes its nest either amongst the tall reeds and rushes actually growing in the water, or in the dense vegetation on the banks. It is a simple structure made of dead fragments of aquatic herbage, lined with grayish-black down; and the eggs, from eight to twelve in number, resemble those of the preceding species, but are slightly smaller. This bird also dives for its food, tearing up the weeds at the bottom of the water and eating them as they float on the surface. In winter its numbers are increased by arrivals from the north, which in flocks frequent all suitable parts of the coast.

THE EIDER DUCK

(*Somateria mollissima*)

THE Eider is one of the most beautiful of the Sea Ducks, but is rather locally distributed, never breeding farther south than the Ferne Islands. The Eider Duck loves a wild rocky coast, where it can rear its young in seclusion. Except during the breeding season this interesting bird seldom leaves the sea. It may sometimes be seen standing on the low rocks, but it usually keeps well out to sea, sleeping safely on the rolling waves. It is during the early summer months that the habits of the Eider Duck are by far the most interesting and the most readily observed. Then you may watch parties of these charming ducks swimming close inshore. They love to draw landwards with the flowing tide, and swim just outside the waves that turn over and break on the beach. I often conceal myself amongst the rocks high up the shore and watch the movements of these feeding Eider Ducks. How can one describe the beauty of such a scene? How can the pen convey to paper the charm encircling rock and dark green sea, the roar of the surging tide, the deep blue sky, the health-giving invigorating breeze, the snow-white sea-birds, and the floating Eiders, tossed like corks on the mighty rollers, which heave and swell and turn clean over, breaking into a million liquid fragments on the sandy beach? Such is a little of the poetic side of Ornithology.

The Eider Duck is an expert diver, and it is most inter-

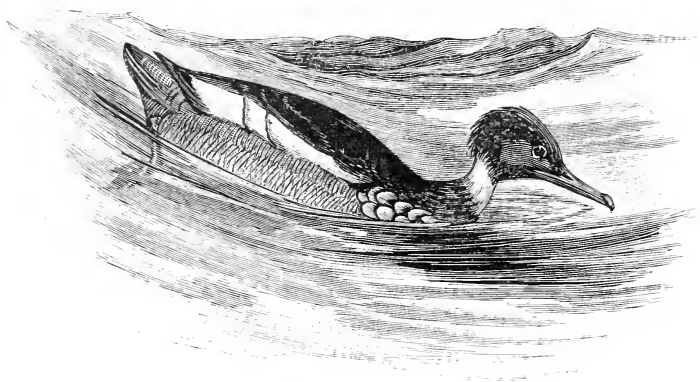
esting to see these birds swim through the clear glassy wall of water, just before the big wave turns over and breaks in a seething froth-crowned line along the shore. The birds ride lightly as flecks of foam, now high up on the curling crests of the waves, then deep down in the trough of water, hidden from your view. Gradually they float nearer and nearer inshore, feeding as they come; but if alarmed they quickly swim farther out to sea, only taking wing when absolutely compelled. The Eider Duck flies quickly, with rapid and regular beat of wing, generally close to the sea, and rises from the water at once and with little splash. Its food is obtained almost exclusively from the sea, and consists of the small crustaceans, marine insects, and small shellfish. The birds obtain most of this food inshore, especially in places where the incoming tide stirs up the sand and fills the water with various forms of animal life. The Eider Duck is gregarious in winter, and more or less sociable in summer, parties of six or eight birds often being seen on the sea near the nesting-places. It is a remarkably silent bird, except in the breeding season, when I have often heard the male utter a note something like that of the Ring Dove, as he swam round and round his mate, bobbing his head rapidly all the time. On one occasion I met with a party of these birds evidently engaged in pairing, my attention being drawn to them by the chorus of grunting notes the male birds were uttering. It was a most animated sight, and the drakes were constantly chasing each other with angry cries, or swimming excitedly round the ducks, with trembling wings and heads swaying up and down. The noise made by this party of Eiders could be distinctly heard a mile across the water. When alarmed both sexes utter a harsh grating cry, very unlike the usual quacking sound made by most Ducks.

The flocks of Eider Ducks separate more distinctly into pairs at the first sign of spring, although the nest is not made

until the beginning or middle of May. The Eider Duck always prefers to nest on a small, rocky, uninhabited island. The female makes her nest in various situations—sometimes amongst the dense growth of sea-campion and coarse grass, some distance from the waters, at others in a crevice of the rocks a little way above high-water mark. At the Ferne Islands many Eider Ducks nest in the old ruins on one of the islets; and I have seen its nest at St. Kilda, on the island of Doon, at the top of the cliffs several hundreds of feet above the sea. At this latter nest the female never moved until I almost trod upon her, and at first I thought it was a piece of rock that had slipped from under my feet, so quickly did she hurl herself down into the water, hissing and foaming like a caldron, far below. The nest is usually a bulky well-made structure of coarse grass and dry seaweed, bits of marine vegetation, and sometimes heather, lined profusely with the down from the female's body. This latter material gradually accumulates after the first egg is laid. The eggs are six or seven in number, and very pale green in colour without any spots or markings. During the whole time the female is engaged in domestic duties, the male never comes near the nest—in fact, he rarely comes upon the land at all. At stated intervals the female covers her conspicuous eggs and hurries down to the sea to feed, when the male generally joins her and they swim in company. It is an error to suppose that the male deserts the female at this period. He only keeps away from the nest, as if fully conscious that his showy plumage would help to betray its whereabouts to enemies. During the whole period of incubation he rarely wanders far from the sea which is nearest to the nest, and where his mate is in the habit of coming to feed. Parties of males, however, generally swim in company at this season, and this may have led to these erroneous opinions. Sometimes many nests are built quite close together, especially in districts where the birds are

preserved and regularly farmed for the sake of their precious down, which is used for stuffing quilts and other purposes, and forms a valuable article of commerce. Only one brood is reared in the year, but the eggs are often taken in districts where the down is collected, to entice the poor birds to produce a further supply for the next clutch of eggs they deposit.

When the young are hatched the duck conveys them to the sea. This she must do in her bill from many situations where the nest is built high up the rocks. They take to the water at once, and swim about with their parent, diving for food with great agility. As the year draws on, and the Eider Drake has completed his change of plumage, the broods gather into larger flocks for the winter, and spend most of their time on the water. Now the birds often go great distances out to sea, but in stormy weather they frequent the quiet bays and creeks. The birds become much more wild and wary, especially the females. Indeed, so tame are these birds when sitting on their nests that I have frequently stroked them with my hand as they sat most unconcernedly over their eggs. Eider Ducks do not flock much with other birds; but the rare and still more beautiful King Eider (*Somateria spectabilis*), an inhabitant of the arctic regions which sometimes visits the British seas, frequently swims in their company. This latter bird I have seen at St. Kilda during the summer; and I have no hesitation in hazarding the conjecture that its nest will ultimately be discovered within the limits of the British Islands, probably at no very distant date.



THE RED-BREASTED MERGANSER

(*Mergus serrator*)

THE naturalist in the southern portions of the British Islands only knows the Red-breasted Merganser as a winter guest, but it is a resident in all suitable parts of the wild and rocky north. It is a bird of the coast, and loves to frequent the quiet lochs and inlets, the secluded bays, and the rocky islands, where the shores are little frequented by man, and it can find an abundance of that solitude it so dearly loves.

Stroll into the haunts of this singular yet handsome bird when May has carpeted the banks of loch and bay with primroses, with golden gorse and bluebells, and watch its actions by the shore. It is wary and shy, but the rocks will conceal you, and you may watch its every movement. It is now in pairs, each pair taking up its residence on some particular part of the coast, or near the rocky islands, where eventually the duck will make her nest. Swimming side by side in the deep water close to the rocks, they ever and anon

keep diving under the surface, and reappearing some distance farther on. Then they paddle in the shallows, or stand upon the rocks over which the tide is still washing, preening their plumage, or waiting for the small fish to appear. A favourite haunt of the Red-breasted Merganser, abounding with its food, is where the trout stream from the distant hills falls into the loch. When swimming on the sea the female often dives and is chased by her mate for some distance, and he often pursues her through the water, which is churned into bubbles and foam with their aquatic gambols. In several places I have noticed these birds visit the rocky beaches, and, where vast expanses of seaweed are left exposed at low water, search for some favourite food. As soon as the rocks began to appear at the ebb of the tide, pair after pair of Mergansers came flying up, sometimes passing along close to the surface of the water, more rarely at a considerable height. Here they would remain feeding amongst the rocks and in the pools and shallows, until the ground was once more covered with the flowing tide, when they would depart in pairs, as they came, to the distant rocky islands, where they waited until the water had once more begun to subside. The Merganser flies quickly, with rapid and regular beat of wing, rising from the water heavily and with a great splash and flutter. It swims low in the water, but is very graceful in its movements. Few birds are more expert at diving, and it chases the tiny fish through the water, seldom failing in its efforts. Whatever food is secured under the water is always brought up to the surface to be swallowed, and usually, as soon as it has disposed of its capture, the bird drinks and rises half out of the water and flaps its wings.

The Red-breasted Merganser lives entirely on animal substances. It eats quantities of small fish, especially fry, and often joins the Terns when they have discovered a shoal swimming near the surface. Crustaceans and little crabs are

also sought for ; and I have known it feed on limpets and whelks which the Oystercatchers have detached from the rocks and only partly devoured.

A word as to the peculiar bill of this interesting bird. If you examine it you will find that it is long and narrow, something like that of the Cormorant, and both mandibles are furnished with small teeth all directed inwards like a saw. This bill is beautifully adapted to seize and hold a fish ; and in many places the Merganser is universally known to the country-people as the "Saw-bill."

I do not think that the Red-breasted Merganser is at all gregarious during the breeding season. It is usual to meet with them in scattered pairs, although very often several nests may be found quite close together, especially in places where suitable situations are scarce. Even then the birds keep to themselves, and I never see the males in parties near the nesting grounds, although they may so congregate when moulting later on in the season. In all cases the Merganser prefers an island to the mainland for a nesting-place, and I have never met with the eggs of this species at all in the latter situation. Of the numbers of nests that I have examined, all have been on the rocky islands ; but on one occasion I found a nest built on a portion of the shore which was an island only at high water. The nest is scanty, and in some cases is dispensed with altogether. In many cases you will find the eggs on the bare ground under a rock, with only the down from the female's body round them. In other cases a slight nest is made amongst the tall heather or furze —of dry grass, dead leaves, and the usual quantity of down. The eggs are from eight to twelve in number, olive-gray in colour without markings. In many cases, when only a few of the eggs have been deposited, there is nothing to cover them, and they are left exposed whilst the female is away ; but when a nest is made, and the down has been plucked,

they are usually carefully covered during her absence. Sometimes the female sits very closely, at others she slips off at the first sign of danger, and in all cases she goes right away from the place and evinces no further concern or anxiety for her home. The male bird does not assist the female at the nest. As is the case with the other Ducks, he keeps guard on the sea close by, joining his mate when she comes to feed; and as soon as the young are hatched he retires to complete his annual changes of dress. The mother takes her ducklings to the sea shortly after they are hatched, where they are very active, swimming and diving with perfect ease.

In the winter months the Mergansers become much more gregarious, and in stormy weather often frequent for days the sheltered creeks and lochs. In many cases, however, these flocks are only composed of the brood and their parents. At this season they wander far from their usual haunts, and are sometimes driven inland by storms to ponds and rivers. Red-breasted Mergansers are remarkably silent birds, and rarely utter their harsh call-note.

The Goosander (*Mergus merganser*) is best known as a winter visitor to the British Islands, but a few pairs remain to breed in the remote parts of the Highlands. The bird is readily distinguished from its commoner ally by its larger size and beautiful black and white plumage. I have often met with this charming bird on the coast in winter and early spring. It loves the wild lochs and mountain islets, and swims up and down the tiny creeks in quest of food, usually in pairs, just like the Red-breasted Merganser. Although I did not meet with it in St. Kilda (the shores are too steep), I have repeatedly seen it along the coast-line of the Outer Hebrides, and less frequently on the low-lying coasts of the Wash. Its food is almost exclusively composed of fish, which it catches in the same manner as its congener. The most interesting feature in the economy of this beautiful bird is the

fact that it breeds in hollow trees by preference. Failing them a hole in a rock is used instead. The female lays from eight to twelve eggs, creamy-white in colour, devoid of markings, and the nest is warmly lined with a profusion of beautiful grayish-white down of gossamer lightness. The Goosander's nest is one of the richest prizes that can fall to the ornithologist's lot throughout the great and varied bird treasures that favoured Scotland contains.

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THE GANNET

(*Sula bassana*)

EARLY in the vernal year—sometimes before the bleak dreary winds of March are hushed—the Gannet stays its roaming life and repairs to its breeding-places. In our islands these are few and far between. By far the best locality for studying the nesting economy of the Gannet is the Bass—that wide-famed mass of basaltic rocks standing like a sentinel in the Firth of Forth, guarding the metropolis of bonny Scotland. This noble rock is seared and furrowed by many a scar, the buffet-ing of storm and sea for ages, and is a familiar object for many miles round. I will ask the reader to repair with me to this lonely sea-girt rock and make himself acquainted with the Gannet and its nest.

The Bass is best reached from North Berwick by a pleasant walk of three miles, either along the coast of the Forth or through the charming highways, the hedges of which are fragrant with a wealth of sweetbriar, to Canty Bay. From here the rock is two miles from shore, although it does not look half that distance. Upon reaching the Bass a few Gannets may be seen sailing dreamily about ; but you can form no idea of their vast numbers until you climb the rugged hill, unless you elect to sail round and view the majestic cliffs from the sea. Getting on shore at the only landing-place, a short climb up the steep and rugged base of the cliffs brings us to the ruins of an old fortress, whose moss and

grass-grown steps lead upwards to a door, which is placed here evidently for the purpose of protecting the rock from the intrusion of trespassers—for be it known the Bass is private property, and rented as such. Passing through the doorway and the ruins beyond, we climb in a westerly direction to the top of the cliffs. But little of interest to the ornithologist is to be seen. Land-birds are not entirely absent from this isolated rock, however, for the Rock Pipit flits before us uttering its monotonous chirp, and a little Willow Wren wanders restlessly about, evidently ill at ease so far from the trees and bushes. No Gannets breed on the southern slopes, for they are not suited to their purpose, their breeding-places being principally confined to the north, north-east, and west cliffs. But when the summit of the cliff is reached the scene that bursts upon our gaze is one that well-nigh baffles all description. Thousands upon thousands of Gannets fill the air, just like heavy snow-flakes, and on every side their loud harsh cries of *carra-carra-carra* echo and re-echo amongst the rocks.

The Gannets take very little notice of our approach, many birds allowing themselves to be actually pushed from their nests. Others utter their harsh notes, and with flapping wings offer some show of resistance, only taking wing when absolutely compelled to do so, and disgorging one or two half-digested fish ere they fall lightly over the cliffs into the air. On all sides facing the sea the Gannets may be seen. Some are standing on the short grass at the edge of the cliffs fast asleep, with their head buried under their dorsal plumage; others are preening their feathers; whilst many are quarrelling and fighting over standing room on the rocks. All the birds, however, seen around us are not nesting—those whose plumage is in any degree speckled with darker feathers are immature, and will not breed until they obtain their fully adult dress, which is not until they are four or five years old.

Gannets commence breeding early in May, not simultaneously though, for even now, at the time of our visit, in the middle of the month, many birds may be seen flying about with nest material in their beaks. The nests are built either on the rugged summit of the cliffs, where you can obtain their eggs with very little exertion or danger, or far down the precipices on the ledges and platforms to within a hundred and fifty feet of the sea. The nest is not a very bulky structure, nor is there anything very attractive in its appearance, and the stench arising from the dead fish lying round it, and the droppings of the birds which cover it and the surrounding rocks, is often most offensive. It is made of seaweed snatched from the water, turf from the summit of the cliffs, straws and a little moss, and is very shallow—well described as a flattened cone. It is either placed on the flat rock, or amongst the loose fragments and in the rugged hollows. Numbers of nests are built close together; every available site in some places is occupied; and great is the struggling, biting, and quarrelling incessantly going on where the birds live in such close companionship. The egg of the Gannet, for but one is laid, is very pale bluish-green when first deposited, but soon becomes soiled by contact with the materials of the dirty nest and the bird's wet feet and plumage. To such an extent are some of the eggs discoloured that they resemble those of the Kestrel in richness of tint. Gannets' eggs are covered with a chalky substance, like those of the Cormorant, which is easily scraped away. If the first egg is removed, another will be laid several times in succession. It has been said that the Gannet sometimes lays two eggs, but this is erroneous. Two eggs may sometimes be seen in a nest on the top of the cliff, but they have been placed there by mischievous human visitors, not by the birds. I know of no bird that seems to think so lightly of its egg as the Gannet, or that uses it so roughly, treading on it

and rolling it over and over as she watches you suspiciously and prepares for flight. She seems quite ignorant of the fact that eggs are brittle things ; but there is method, I suppose, in the process. This singular habit, however, has not escaped the notice of certain Natural History wizards, who would fain have us believe that the Gannet hatches her egg by holding it in her webbed foot, and not by the legitimate and almost universal process !

As I previously stated, it is an easy task to obtain the eggs of the Gannets, so long as you confine your operations to the summit of the rocks. Here a child may take them ; but when you descend to the nests far down the face of the cliffs your search is attended with no small amount of danger. For the purpose of becoming thoroughly acquainted with the nests of the Gannet in places where man could not tamper with them, I climbed down the cliffs on to the low-lying ledges. Here the nests are so close together that the greatest caution must be exercised or you would break numbers of eggs. Sometimes aided by the rope, and sometimes with hands and feet alone, I reached the most densely populated shelves and platforms midway down the beetling precipice. The sea was dashing against the rocks some two hundred feet below, and the Gannets on every side were leaving their nests, disgorging fish previous to taking wing, or with loud cries making ready to defend their eggs. Here and there pairs of Kittiwakes were sitting close together on the ledges, and now and then a Jackdaw flew hurriedly past, whilst numbers of Guillemots darted from the rock crevices and shelves in hurried flight to the ocean below. It was indeed a grand impressive sight. The air all along the face of the cliff, and for some distance out above the water, was filled with thousands of fluttering Gannets ; the rocks around me were almost as densely populated ; and the sea below was swarming with Puffins, Guillemots, Gulls, and vast numbers of Gannets. Few birds fly so

lightly or so gracefully as the Gannet, and their actions in the air are ever full of interest. I often seat myself on the ledges midway down the cliffs, where, undisturbed, I can watch the flight of this charming bird. Inspection is easy, too, for the birds fly quite close, and you may observe their every movement. With wings expanded to their utmost limit, some five or six feet across, tail spread to its full extent, the centre feathers very elongated, and the legs pressed closely to the body, the large feet tucked away amongst the feathers of the vent, the Gannet floats about seemingly without exertion—and, what is also remarkable, it rarely utters a sound of any description on the wing; silently it passes through the air, a matchless example of ease and gracefulness.

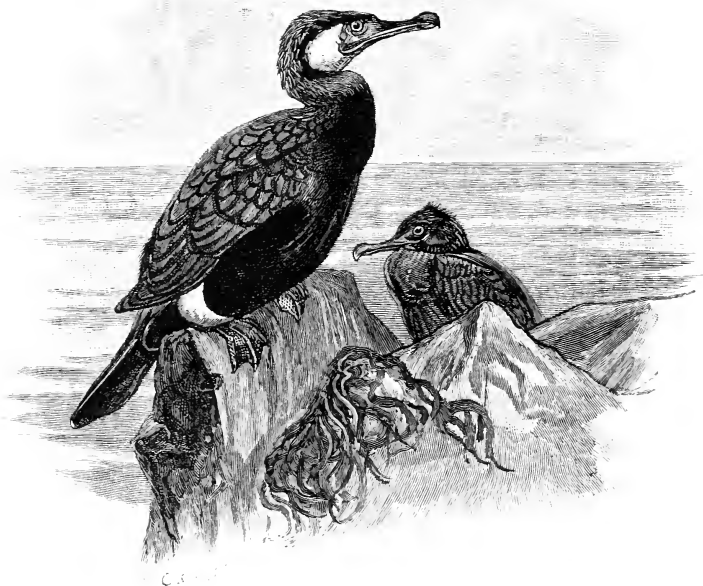
Now a word on the dangers attending the exploration of the cliffs at the Bass. In the first place, the birds themselves must be guarded against; for they not unfrequently endeavour to strike at the eye of him who invades their almost inaccessible haunt. Then as the birds leave the ledges above, they are apt to strike the climber full in the face, when, if he be not prepared, he is likely to lose his precarious foothold. Again, the rocks should only be explored in dry weather and barefoot; for after rain they are exceedingly slippery, owing to the slime and filth which pervades the vicinity of the nests. The chief danger arises, however, from the pieces of rock which may fall from above—either knocked away by the rope, or pulled on to the unwary climber as he incautiously trusts himself for support upon them. I have had many narrow escapes from these falling rocks during my excursions over these and other bird cliffs. I allude to them by way of caution to him who would explore these places in quest of ornithological information.

The Bass Rock is estimated to contain ten thousand pairs of breeding Gannets, in addition to which there are the immature birds in various stages of speckled plumage. The

tenant of the rock takes vast quantities of eggs and young birds every year—the latter chiefly for the sake of their feathers and fat; although at one time a roasted young “Solan Goose” was regarded as a delicacy by the country-people round about. For this privilege he pays the sum of thirty pounds yearly to Sir Hugh Dalrymple, in whose family the Bass has been for nearly two hundred years. The Guillemots, Puffins, and Gulls also increase the profits of the rock, as also do the rabbits, with which the place abounds. This great bird nursery becomes even more interesting when the young are half grown, and no pen can do justice to the stirring scenes of bustle and excitement.

Another great breeding-place of the Gannet is on the island of Borreay and its adjacent stacks, about four miles from St. Kilda. The flat sloping top of one of these stupendous ocean rocks, called by the natives Stack-a-Lii, looks white as the driven snow, so thickly do the Gannets cluster there, and the sides are just as densely populated wherever the cliff is rugged and broken. So vast is this colony of birds that it may be distinctly seen forty miles away, looking like some huge vessel under full sail bending to windward. The climbing of this stack of rocks is considered one of the greatest feats a St. Kildan can perform in the art of cliff-climbing. Every autumn, when the young Gannets are nearly ready for flight, a party of men scale the beetling precipice and kill as many birds as they can, throwing their bodies into the sea, where they are picked up by boats rowing up and down for the purpose of collecting the spoil. The Gannet is highly prized by these primitive people, for the sake of its feathers, its oil, and its flesh. I should not like to hazard a conjecture as to the enormous numbers of these birds which are killed here every year. When in St. Kilda I often used to watch the Gannet fishing. The manner in which this bird takes its prey is very interesting. The Cormorant

pursues its prey in the water, swimming and diving with the greatest ease, but the Gannet secures its food by plunging from the sky. Gifted with amazing powers of vision, it can see the fish when it is flying high above the water, and pounces down upon them with unerring certainty. From the summit of the cliff you may see the birds flying round and round at a great height. It is their feeding time; the waters are teeming with a shoal of herrings, and the Gannets are intent on securing them. Observe how the bird poises itself for a moment, then, like a piece of brilliant white marble, it dashes downwards into the ocean, disappearing from view, and leaving a mass of foam to mark the place of its descent. In a few moments the Gannet appears on the surface, and flies upwards into the air again to prepare for another plunge. Numbers of birds may be seen swimming on the surface of the water, but they are not fishing—this they only do in the way I have just described. The Gannet swallows its capture directly, and fish are never conveyed to the rocks in its beak. The Gannet keeps its sitting mate well supplied with food, conveying it to the rocks in its gullet and then disgorging it, leaving it to be eaten when required. Far more fish are brought to the rocks than are eaten. The food of the Gannet is composed entirely of fish, such as haddocks, whittings, herrings, and sprats. The bird is a voracious feeder, and often gorges to such an extent as to be incapable of flight. The Gannet never visits fresh water, nor does it ever fly over the land. It is a bird of the ocean alone, and as soon as its young are reared forsakes the land entirely, and wanders far and wide over the wild waste of waters in quest of its finny prey.



THE SHAG AND CORMORANT

(*Phalacrocorax graculus* and *P. carbo*)

THE Shag, Lesser Cormorant, or Crested Cormorant, as it is severally known, is a common bird on those coasts suited to its habits and requirements. These are the bold rocky headlands and steep precipitous islands, either close to the mainland, as at the Bass, or far out to sea, as at St. Kilda. It is not uncommon along the more low-lying coasts in winter, but in summer is never found far from the cliffs. The Shag is a singularly trustful bird, and with the smallest amount of caution you may watch it fishing almost within a stone's throw without it showing the slightest sign of fear. I well remember once watching these birds near Canty Bay, in the Firth of

Forth. The sun was just rising over the hills, and the water was rough from the stiff morning breeze. A little distance from shore a company of Shags were fishing on the lee side of the rocks, whilst others were disporting themselves in the sea. By cautiously creeping over the rough beach I got quite close to them, and was able to observe their every action. Some were floating quietly on the water, buoyant as corks; others kept diving at intervals in search of food. Many were seated on the rocks preening their plumage, or, with wings widely expanded, seemed to be enjoying the warmth from the bright sun and drying their feathers. It was indeed a lively scene, but the birds were very quiet. Not a sound was heard save the splashing of the water against the rocks, and the occasional scream of a Gull as it flew lazily by scanning the surface of the sea for food. Numbers of the birds kept quitting the rocks and flew in a heavy manner towards the distant Bass, which probably contained their nests; whilst others as frequently arrived from the sea to find a resting-place on the low rocks. The Shag flies swiftly, with rapidly-beating wings and long neck extended, generally passing along quite close to the waves. Few birds are more expert at catching fish than the Shag; and few birds are more at home in the water. He catches nearly all his food by diving for it, and is most active in his labours in the morning and during the hour before sunset. At dusk the Shag hurries off to its roosting-place, usually flying in little parties just above the sea to the caves and rocky islands which form almost its only resting-place on land. Regularly do the birds frequent the same spot to roost, which is generally their nesting-place; but sometimes in the autumn and winter the caves are deserted, and rock-ledges are used instead.

The Shag is never seen fishing much very far from shore; he prefers the quiet bays and creeks, and along the sides of the cliffs where the water is deep. I often pause and

watch the Shag as the sun draws near the western horizon. He swims along close inshore, and every now and then springs almost out of the water, arches his long neck, and dives head first into the sea. In a few moments he reappears with a struggling fish, which often glitters like molten silver, in his bill. This is swallowed as he floats upon the sea, and then he swims along again, diving every few yards, but not always returning with a fish. He wanders thus for a mile or more, all the time not going twenty yards from land; and you will find that he rarely stays long where the beach is sandy, always preferring the deep water near the rocks. Almost every evening at St. Kilda I used to wander down to the rocky shore to observe the habits of this dusky-feathered fisherman.

The food of the Shag is composed of small fish, and the bird often gorges itself to such an extent as to be unable or unwilling to fly. Like the Gannet, the Shag never conveys a fish to the rocks in its beak, but always swallows it and disgorges it afterwards, to be eaten at leisure—a fact which is proved by the quantities of fish strewn about the nesting-place.

The nesting season of the Shag is in May; and from what I can learn respecting the matter, I pronounce this bird to be a life-paired species. Its breeding-places are confined to the rocky coasts, where it usually selects some cave or rock fissure in which to build its nest. Here, for instance, is a cave in the sea-girt rocks, into which the water is ever dashing, filling the place with a boom like thunder, and sending the spray in showers far up the wet slippery sides. In this gloomy cavern numbers of Shags are nesting, and as our boat is pulled under the frowning entrance several sombre-coloured birds fly from the darkness and speedily go out to sea. The dusky forms of others may be seen on the ledges and shelves craning out their long necks and swaying their bodies from side to side, as if undecided whether to take wing at once or stay and guard their treasures. One by one they quit the rocks, how-

ever, and at last we are left alone in their gloomy haunt to examine their nests at will. The white droppings show out conspicuously enough in the gloom, and mark the situations of the nests, which are as a rule on the ledges and in the crevices, far above the reach of the highest tides. Every available place appears to be tenanted, and some of the nests are quite inaccessible, so deeply are they placed down in the crannies of the rocks. The nests are made of sticks, grass, and weeds of various kinds, rudely but strongly put together, and thickly coated with droppings, and slime from decaying fish. In form they are flat and shallow, and the cavity which contains the eggs is small in comparison with the rest of the structure. From the appearance of many of these nests, they have been in use for years, and appear to have been increased and strengthened every season. The eggs of the Shag rarely exceed three in number, sometimes only two, and in rare cases I have known but one. They are also sat upon as soon as laid, and many of the nests contain young birds and eggs partly incubated. The eggs are very elongated, delicate green when newly laid, and covered with a thick coating of chalk, which is easily scraped off with a pen-knife. They soon become very much discoloured from contact with the dirty nest and wet feet and plumage of the sitting-bird—so much so in some cases as to hide all trace of their original colour. They vary considerably in size and shape, and cannot with certainty be distinguished from those of the Cormorant, unless thoroughly identified at the nest. Young Shags and Cormorants are indeed weird-looking objects, being covered with black down. They are born blind, and remain in the nest until they are fully fledged.

As I have previously stated, the cave in which the Shag rears its young generally serves it for a roosting-place and a retreat from the storm. It is at all times a sociable bird, and in autumn and winter, after the young are safely reared,

hundreds of Shags congregate into a flock, and feed and fly in company with almost as much regularity as Rooks.

The Cormorant next claims our attention. In many of its habits it differs considerably from the preceding species, and the haunts it frequents are much more varied. In the first place, the Cormorant is not nearly so oceanic in its habits, and frequents the inland lakes and pools almost as much as the sea. It is especially fond of visiting ponds and sheets of water that are close to the sea and well-stocked with fish. If there are small islands in them the Cormorants are even still more at home. In winter especially the Cormorant frequents fresh water as much as the sea, and at all times may be found on low-lying coasts as well as on steep and rocky ones. Again, the Cormorant is not nearly so much of a cave-haunting bird as the Shag ; and another very important and striking difference is its habit of perching in trees. One would think that its webbed feet would prevent it from choosing such resting-places ; but parties of Cormorants may often be seen perched on the dead branches of trees and on old stumps and piles. I have frequently seen this bird retire to the branches to preen its plumage, sun itself, or digest a meal ; and it often chooses a stump or branch, or even a wire fence, near the water, from which it dives in quest of food.

Cormorants fish in several ways. Sometimes they swim up and down the water like the Shag, diving at intervals ; at others they swim with the head entirely submerged and the body low in the water, as though exploring the luminous depths with their piercing eyes alone. It always secures its prey in its beak, and almost invariably swallows it at once. Like the Shag, the Cormorant often sits on a favourite perching-place with wings extended, drying them in the warm sunshine and the breeze, after its gambols in the sea. The flight of the Cormorant is very seldom taken far above the

surface of the water, except in inland districts, when it frequently passes from place to place at a good height in the air. Its flight is a heavy and laboured one, but rapid and well-sustained. The Gannets sail in graceful circles, almost without effort; the Gulls and Terns dart here and there in airy course, surveying the water below; but the Cormorant pursues his rapid flight, straightforward and steady, as if bent on getting to his destination as quickly as possible. Cormorants never fish from the air like Gannets and Gulls, but always when at rest, either perched on rocks or trees, or when sitting on the surface of the water. Their powers of diving are unrivalled, and they seem to fly as readily under the water as through the air.

The food of the Cormorant is composed almost exclusively of fish, both those from the sea and the fresh inland waters. Eels and roach are favourite food of this bird's, and his proneness for them too often leads to his destruction, man seldom welcoming this feathered fisher to his lakes and ponds. Alas! poor ill-fated Cormorant, thy lot is a hard one, and thou hast but few indeed to protect or befriend thee! The ancients have placed on record a history of thy misfortunes, which, if legendary, still proves the interest they took in observing thy strange habits and economy.

Cormorants pair very early in the year, and about this time the male bird assumes certain nuptial ornaments. He does not don a crest like the Shag, but a tuft of white plumage grows out near the thighs, and the head and neck become suffused with white filaments. These soon wear off, and the Cormorant has lost his wedding finery long before the young are hatched. The breeding grounds of the Cormorant are not always near the sea, nor are they confined to the rocks. In some cases inland localities are chosen, such as islands in lakes and ponds; and occasionally trees are selected for the purpose, the nest being built firmly in the

topmost branches, like that of the Heron or the Rook. I am of opinion that the Cormorant pairs for life, judging from the fact that its nest is yearly tenanted. Its breeding season is in the month of May—in some years not until early June, according to the state of the weather. Sometimes the nests are almost if not quite inaccessible. On Flamborough's beetling cliffs or at the Ferne Islands the nesting habits of the Cormorant may readily be observed. The nest is built upon the ledges, usually near the top of the cliffs, but sometimes midway down them. On the face of this stupendous wall of cliff several Cormorants have built their nests—let us visit them and observe their peculiarities. Barefooted, and aided by a rope, we are able to reach the nests, some thirty feet from the summit. At our first appearance the sitting-birds quit their homes and go far out to sea on rapid beat of wing. We find the nests are made of sticks, weeds of various kinds, turf, and fine grass—much of it green. They are bulky structures, and the smell from the decaying fish and the droppings of the birds which pervades the entire place is sickening in the extreme.

The eggs of the Cormorant are two or three in number, in some instances only one, and are precisely similar to those of the Shag, but are on an average a little larger. They are long and oval, and vary much in size. The Cormorant rears but one brood in the season, but if its eggs are taken (as they habitually are in many localities) fresh ones will be laid. The young are reared in the nest, and fed on food disgorged by the parents in a half-digested state. The Shag is similar in this respect.

On the low rocky islands Cormorants' nests are often built so close together that it is almost impossible to walk amongst them without injuring the contents. In these situations the birds breed like Gannets, but the nests are more bulky structures—the largest and probably the oldest

ones being immense piles of sticks and vegetable refuse, the accumulation of many seasons. The ground is strewn with decaying fish, and the nests and rocks are white with the droppings of the birds, so that on close warm days the stench becomes almost unbearable, and may be detected a long distance over the water. It will thus be seen that the Cormorant has three very distinct kinds of nesting-place—trees, rocks, and low islands. This fact is interesting, for it shows us how readily some birds can and do accommodate themselves to circumstances.

In winter Cormorants collect into flocks of varying size, and wander far and wide in search of food. At this season they visit low-lying coasts and many inland pools, being attracted by the supply of fish, or driven in by stress of weather. During very rough weather the Cormorant does not fish much, but sits and mopes on the rock-shelves and in the quiet creeks under the cliffs, waiting for the storm to pass and the angry waves to calm ere it can resume its labours.

THE PHILOSOPHY OF BIRDS' NESTS AND EGGS

It is my intention to devote the closing pages of this volume to a few remarks on the Nests and Eggs of birds. These charming objects are almost universally regarded as simple spoil for the cabinet—pretty things to gaze upon from time to time, like old china and other bric-à-brac, with no interest beyond their exceeding beauty. By him who takes delight in prying into Nature's secrets they are, however, regarded from a very different point of view. Close and unceasing observation has enabled him to read their long important history, and to trace the relationship of their varied tints and intricate design with the economy of the feathered creatures that produce them.

Let me first of all strongly impress upon the reader that it is impossible satisfactorily to study the egg or the nest of a bird away from the bird itself—the two objects are inseparably linked together. Most necessary, therefore, is it to have the bird and its life-history before us when studying the egg, with its varied tints, and the nest that contains it, with its infinite diversity of structure and position. In the first place, a word must be given to the plumage of birds: Let us see how the beautiful and harmonious colours of their plumage are related to their nesting economy. Birds rank high in the scale of beauty—of all other living forms but few, if any, excel them in the richness and variety of their outer covering. The

gayest and gaudiest of butterflies, all radiant in their refulgent sheen and gold and silver livery, are no more beautiful than the Humming Birds in their gorgeous dress of green and gold and purple fire. The Kingfisher in his blue and green array vies with the flowers in fairness and richness of colour—the Pheasant and the Mallard are clothed in plumage of highest beauty. For what purpose is all this rare and matchless beauty given throughout the realm of organic nature? Of what use is it to all its fortunate possessors? Rest assured that this beauty has not been developed aimlessly, or for the sole purpose of gratifying the eye of man. Much organic beauty is hidden away in ocean depths; much more in trackless forests, or on the highest mountains, in places where human beings are scarce, and of such low development as to be totally indifferent to the wonders and the charm of beauty in organic life. No; this beauty in the bird-world especially has a fixed and definite object—one grand and all-important purpose—the *benefit* of the species acquiring and possessing it. We are not, however, concerned with the origin of the various tints with which birds' plumage is adorned—that is a long and intensely interesting story which I hope to tell elsewhere. Sufficient now for us to know that such beauty of plumage has had its origin through the laws of Isolation, or in the struggle for existence to which each bird is subject, either through Natural or Sexual Selection. We are now concerned with the infinite variation of colour, and to some extent of form, in the eggs of birds, and the endless diversity of their beautiful nests.

Every observer familiar with birds is aware of the fact that the plumage of the female is in a great many cases much less brilliant than that of the male; and in some instances so marked is this difference of plumage that the sexes of one species might very easily be classed as two separate species. Why this great diversity? Close observation has revealed the fact

that the colour of many female birds is connected in no small degree with their mode of nidification, and that the sitting-bird derives her only safety from the harmony which exists between her own sober plumage and the colour of surrounding objects. The males of many of our common birds possess extreme brilliancy of plumage, but their females are remarkably dull and sombre in appearance. The gorgeous Pheasant is a good example. His brilliant plumes are familiar to all, yet his mate is brown and singularly plain in appearance. Her sober plumage, however, is of the greatest importance. She builds her slight nest on the ground in places where surrounding vegetation harmonises with the colour of her own sober dress, and this effectually conceals her and her eggs from enemies. The Black Grouse is another interesting instance, the difference in the colour of the sexes being even still more marked. The Wild Duck and the Teal are others. The Drakes are two of the most conspicuous and most beautiful of our native birds—their mates are singularly plain in appearance. The same great end is served in this striking difference of the plumage of the sexes. In both cases the nest is open and exposed, and the female derives her safety during the trying period of incubation from the sober colouring of her plumage. Among more homely species the Blackbird and the Ring Ouzel, the Chaffinch and the Bullfinch, may be cited as instances. As the reader is aware, the males of all these birds are handsome and conspicuous, the females are dull and sombre, and all build open nests where the sitting-bird is exposed to view. We may thus lay it down as an almost universal rule that birds of brilliant plumage which nest in an open site have the females remarkably different in appearance, and dressed in tints harmonising in colour with the surroundings of the nest.

We must now notice another very interesting class of birds, namely, those in which the above rule is absolutely

reversed. Throughout the whole order of birds there are few in which the female is more brilliantly attired than the male. In our own country the instances are exceptionally rare. The Phalarope and the Dotterel are the only two which may be said to conform to this law. Both these birds build open nests in more or less exposed situations ; but curiously enough the more brightly adorned female does not sit, and upon the less showy male devolves the task of incubating the eggs! In various other parts of the world birds are to be found to illustrate this singular law, but no better illustrations can be given.

Let us now pass on to our second great group of birds in which both sexes are brilliantly adorned. One of our most striking instances is to be found in the refulgent Kingfisher. In this species the sexes are alike in colour, and remarkably beautiful and conspicuous. How does Nature shield the sitting-bird during the nesting period? Why has she allowed such brilliant tints to be developed in the female? By sending the Kingfisher to a hole in a bank to lay her eggs and rear her young in darkness, Nature provides most admirably for the safety of this feathered gem. The gaily-dressed Woodpeckers, the Titmice, the Starling, the Swallow, and the Martin, all have the sexes alike in colour or nearly so—all are conspicuous, showy birds, and all rear their young in holes, where the bright and showy female is hidden from view during the trying days of incubation. The naturalist will find certain exceptions to the rule, but throughout the birds of the world, where both sexes are brilliantly adorned, the nest is either domed or in a hole, where the conspicuous sitting-bird is concealed effectually from enemies.

We next briefly glance at a group of birds in which both sexes are dull and sombre, that build covered nests from other motives of safety than concealment. The Swift and the Sand Martin are both dull-plumaged birds, the sexes are alike in

colour, and they build nests concealed in holes. The Swift makes its rude nest in a hole ; it has no means of protecting itself or its eggs from enemies, and consequently retires to such a site where it can rear its young in comparative safety. So, in like manner, the sombre Sand Martin for a similar reason seeks the sand-banks. Sparrows do not build domed nests or lay their eggs in holes because the plumage of the female demands concealment, but from other motives—perhaps the result of a deeply-rooted habit acquired during different conditions of life, or inherited from a common ancestor of far more brilliant tints requiring concealment during the nesting season. This rule applies to many other birds. Again, the Wren builds a domed nest, and is yet one of the most soberly arrayed of our native birds. But this is undoubtedly from other motives of safety than concealment ; for from the peculiar structure of her nest few enemies indeed are able to storm her little citadel. Weak and defenceless as this little creature is, she attains by subtlety what she would fail to procure by prowess. The Dipper probably builds a domed nest for the purpose of shielding her eggs and young from the spray which so often surrounds them in her rock-bound watery haunts. Indeed, in the localities she chooses no other type of nest would answer the purpose. The Willow Warblers build domed or partially domed nests, perhaps because a remote common ancestor did the same, but more probably to shield their tender offspring from the moisture which surrounds their usual nesting-place amongst herbage or tall vegetation. The Willow Warblers are an arctic group of birds, breeding in a climate subject to sudden changes of temperature, and this I think may explain their domed nests. As a proof of this I may remark that the Wood Wren builds a somewhat open nest, never lines it with feathers, and avoids all countries where the climate is cool and moist. The Owls almost without exception nest in a covered site, simply because

they dislike the light of day, and naturally breed in situations which are their daily haunts.

It remains now for us to notice a group of birds in which the female is much less conspicuous than the male, and which build a covered nest. The gay little Redstart is a good instance. The female of this species is dull indeed in comparison with the male, yet the young are reared in holes in walls, trees, or rocks; but I can assert from personal observation that the bright-plumaged male assists largely in the duties of incubation. The Pied Flycatcher and the Wheatear are further instances. There are several possible explanations of these interesting facts. The domed or sheltered nest may be for the purpose of shielding the sitting-bird and its charge from cold, or rain, or from some special enemies. It must also be borne in mind that the eggs of these birds are remarkably conspicuous, and must be concealed from view in a covered nest.

We will now leave the birds themselves and confine our attention to their wonderful and beautiful homes. These structures have long been regarded as one of the most convincing proofs of an instinctive power—a power which is popularly supposed to be almost supernatural, of spontaneous origin, and nearly infallible. Such a belief ought to be supported by incontestable facts; but little or nothing can be brought forward in its favour, and the evidence in support of blind Instinct being solely employed in the fabrication of birds' nests is not supported by one particle of proof. I do not for one moment deny the existence of such blind Instinct in some cases—the promptings of reflex and unconscious acts; but so far as birds' nests are concerned, no powers are revealed in their fabrication beyond those which we ourselves possess in a higher or lower degree. A young Duck taking to the water as soon as it is hatched, or a nestling Plover crouching motionless to the earth at the approach of danger, are good

examples of true instinct, analogous to a baby sucking its mother's breast — actions performed without instruction, experience, or previously acquired knowledge. In the same manner a bird's *impulse* to build a nest is instinctive; but the means it adopts to carry out such an impulse are controlled by similar mental faculties to those possessed by man. As soon as we look upon LIFE as universally the same—in beast as in man—then we begin to arrive at right conclusions concerning Nature's wonderful facts. Man has held himself above his more lowly relations too long—he is after all only the highest development of Life; his pedigree is unbroken; and the lower animals are governed by impulses the same as his own in kind, different only in their degrees of mental development. Once admit this, and we have no difficulty in explaining the nest-building capabilities of birds.

The question naturally arises, How do birds build their nest, and especially their *first* nest—is it by blind Instinct or by other mental faculties? To credit the bird with such instinct, which, because it seems so self-evident, is taken to be matter-of-fact, is to admit that it possesses intellectual powers infinitely superior to those of man; whilst the evidence that can be gathered on the subject all goes to show that its intellectual powers are of precisely the same kind as man's; but some of them, of course, are infinitely inferior in degree, whilst others are unquestionably superior. Reason in birds can only be regarded as somewhat rudimentary, though there is undoubted evidence of its existence. The faculties a bird brings into play in building its nest are probably these:—Imitation plays the greatest part, and the next important faculty of the mind is Memory, both of which are distinct from what is popularly called Reason, which together with Hereditary Habit play the minor parts. All these powers are found in Man, but, with the exception of Reason, in a much less pronounced degree, especially in civilised man, in whom it

has to a large extent replaced the lower faculties; for the more Reason is developed, the less are the other powers employed. To credit birds with such a marvellous power as blind and infallible Instinct in building their complex nests, is to endow them with intelligence far greater than anything possessed by Man, and to allot them a faculty which is superhuman! The evidence that we are able to collect all tends to disprove this mysterious power. Birds brought up in confinement do not make a nest typical of their species, and in most cases content themselves with forming the merest rudiments of a nest, merely heaping a lot of material together, without design, on which they lay their eggs; and in some cases even this slight provision is dispensed with. This may be the result of Instinct or Hereditary Habit—the blind impulse to make a nest; but without tuition, or some design to copy, it is woefully at fault. By the way, a most remarkable and convincing proof of this has been recorded by me in *Nature* (1885, p. 533), of a pair of young Chaffinches, which had been turned out in New Zealand, making a most abnormal nest, a drawing of which and further critical remarks on the subject may be seen in the *Leisure Hour* (1888, pp. 344, 633). The same remarks apply to Man; for with all his boasted Reason he is equally as incapable of building a habitation peculiar to his race, if he has not seen one, or been initiated in the secrets of its construction. Savage man neither alters nor improves any more than the birds; and each of his great races has a peculiar style of architecture. The Arab and the American Indian dwell in tents, the negro builds a hut, the Bushman lives in caves, the Malay builds a house on poles, like the very Reed Warbler in the reeds. Now transfer an infant of any one of these savage races, say to civilised Europe, and is it conceivable that when grown up to manhood he would set to work to build a tent, a hut, or a house on posts, according to the style adopted by his race,

instinctively, and with no instruction? If man is so helpless in such a case, why should not the bird be the same? The same remarks equally apply to a bird's song and the language of mankind—each have to be *learnt*!

A bird's mental powers advance towards maturity much more quickly than in the human species. A young bird three or four days old is capable of considerable powers of memory and observation, and during the time that elapses in which it is in the nest it has ample opportunity of gaining an insight into the architecture peculiar to its species. It sees the position of the nest, it notes the materials, and when it requires one for itself, is it so very extraordinary that, profiting by such experience, it builds one on the same plan? I will go so far as to say that a female Chaffinch, for instance, hatched in a nest amongst the hawthorns, studded with bits of white paper, always chooses a similar locality and similar materials when it comes to build one for itself! Again, birds are gifted with amazing powers of memory and observation; they often return to the place of their birth the following season, and possibly see the old home many times ere they want one for themselves. Further, we know that some birds do not breed for several seasons after they are hatched, and consequently see the older birds at work, and profit by the experience. The nests they eventually build may, and often do, vary from the original type in many slight particulars; and it is by these trifling variations, which, when beneficial, are preserved by natural selection, that birds adapt themselves to any changed conditions of life. Again, there is much evidence to prove that the early efforts of a bird in the art of nest-building are full of imperfections and faults—it gains proficiency by experience, and the best nests are made by the oldest birds. At least five per cent of the nests of any one species selected for comparison are carelessly made and lack the usual degree of finish.

One of the great points brought forward in favour of Instinct is the uniformity of the nests of the birds of each species, even though they be widely spread, in localities where they are subjected to various conditions. If this was strictly true, I think it would go far to prove the existence of Instinct; but it is not; for birds, even within the memory of living man, have been known to change and improve their nests under the influence of altered conditions. If a bird built by Instinct, it is fair to assume that that Instinct is unchangeable, and only allows the bird to build on a certain plan. Instinct practically remains stationary; Reason, however, advances. What proof have we of this? Swallows are a most interesting instance—they having partially ceased to build on rocks or in caves, choosing houses and sheds instead. Starlings and many other birds will readily take advantage of a box placed on the house-side for them, and abandon their holes in the trees for the new quarters; Titmice will do the same. The House Sparrow is another instance of a recently changed mode of nest-building; so is the Moorhen, which often builds in trees in districts liable to sudden floods. Many other instances might be given, all tending to prove that birds are capable of taking advantage of any favourable circumstances to alter and improve their nests—a fact which can only be accounted for by the direct influence of their reasoning faculties.

I think we should be very careful in imputing the various apparent imperfections (and the perfections, too) in the architectural qualities of birds' nests to the appliances or tools with which they are constructed. To far more important causes I believe the many differences in these structures may be safely attributed; and instead, therefore, of viewing the Swift's rude nest, or the Ring Dove's wicker cradle, as the inevitable results of imperfect natural appliances, they should be viewed as structures made perfect for the purpose they

serve, and completely in harmony with the requirements of their builders. Instead of viewing the nest of the Chaffinch and the Wren as mere structures, the paragon of perfection and architectural skill, the results of perfect natural tools, they should be regarded as nests, the *only* object their beauty and perfection serves being a useful and protective one.

A bird's beak and its legs and feet are the tools with which its nest is made; yet neither on the form, the length, or any other peculiarity of these parts does the comparative beauty and perfection of the nest depend. The Wren has a finely-pointed bill and long legs; with these tools she builds a well-made nest, which seems to owe its perfect form and well-woven walls to the little creature's natural nest-building tools. But the Chaffinch, with her comparatively clumsy bill and short legs, also makes a nest equally well woven, and even rivalling in its external appearance the Wren's abode. The Titmice, with their short bills and clumsy legs, build nests in holes in trees and walls—structures so poorly made that it is impossible to remove them entire. But the Long-tailed Titmouse, we know, with similar tools builds a nest in the branches, the paragon of beauty and well-woven perfection! The Dipper is another instance. The Swift, with its weak bill and short legs, seems unable to make an elaborate nest; but we know it seeks a hole for its purpose for other motives than its seeming inability to make a nest, and, as is the case with nearly all hole-building birds, irrespective of their natural tools, it is poorly made. The Swallow and the Martin possess similar tools to those of the Swift, yet they build well-made structures, either fastened to the eaves of buildings or on the beams and ledges in sheds and chimneys. The delicate Warblers, with appliances similar to those of the Wren, make slight net-like nests; whilst the Finches, with clumsy beaks and somewhat short legs, weave nests well made and beautifully adapted to the purposes they serve.

The Jay and most birds of the Crow tribe, particularly the Magpie, whose well-made and intricately woven nest is a masterpiece of nest-building art, have powerful and somewhat clumsy bills and feet; yet we know their nests can compare favourably with those of any other class of birds. Many of the clumsy-billed Gulls with webbed feet make well-made nests; as also do certain of the Birds of Prey, the Heron, the Coot, the Moorhen, the Grebes, the Ducks, and the Swans, — nests that exhibit the same *principles* as those of the smaller birds, but of course carried out on a much larger scale. Again, what difference is there between the nest-building tools of the Sparrow-hawk and the Kestrel? None whatever; yet the one builds a fairly-made nest, and the other never makes a nest at all, and rears its young either in the deserted nests of other birds or on the ledges of the beetling cliffs, on no other resting-place than the bare rocks or the refuse of its food. The Woodpeckers, the Kingfisher, the Starling, and some times the Jackdaw, well provided with the requisite appliances for building an elaborate nest, rear their young in structures poorly fabricated in the holes of trees, rocks, banks, or buildings, or do not make a nest at all. From the above-mentioned facts I think that we are perfectly justified in drawing the inference that birds are in no way influenced by the appliances they possess in building their nests. We have seen that birds are capable, quite irrespective of the form of their bills and feet, of making elaborate nests of matchless beauty, or poorly fabricated and very plain in appearance, respectively, and according to circumstances; and we may therefore rest assured that the nest-building capabilities of birds are not in any way subordinate to their natural appliances or tools for making their nests, but are regulated by, and subordinate to, the various conditions under which their young are produced, and especially by the colour of the eggs.

In these charming objects the chief peculiarity which claims our notice is their beautiful ground colours and varied markings. Why, we naturally ask, do these eggs exhibit such diversity of colour? Why are some eggs white, whilst others are painted in tints rich and beautiful? or why are some spotless and others thickly marked? Some persons may urge that these colours are developed for no object beyond that of adding to the beauty and harmony of Nature's works, as they similarly urge the colours of the plumage of the birds themselves; but let us see what an important part the colouring matter of birds' eggs plays in the economy of the birds—let us see how their complex and ever-varying colours conform to the subtle influence of Law. The colouring matter of birds' eggs is influenced by the birds' mode of nidification, and is partly subordinated to the colour of the parents' plumage. For convenience of treatment it is advisable to divide birds' eggs into two great classes, quite irrespective of the affinities of the birds themselves, but solely in accordance with the fact of their being coloured or uncoloured, spotted or unspotted. Each of these great groups may be further subdivided into two sub-groups, which will include the exceptional cases in each.

We will begin with those eggs which display no colouring matter. I think we must start with the very probable supposition that the eggs of the earliest forms of bird-life were white. Colour is a development for protective purposes, and to that cause alone must be ascribed all the wonderful and beautiful diversity of tints with which so many birds' eggs are now adorned. In most birds, where the eggs are hid from sight, either in domed nests or in nests in holes, we never find their eggs exhibiting much colouring matter—it is not required, therefore it is not developed. Eggs brought to maturity in such places are mostly pure white or pale blue, and only in the minority of cases more or less faintly spotted. As

instances coming into this particular group we have the eggs of the Woodpeckers, the Kingfishers, the Titmice, the Willow Warblers, the Wrens, the Owls, and the Martins, all of which are pure white or, in some few cases, sparsely spotted, and are laid in covered nests. This law is almost universal, and, curiously enough, white eggs are correlated to a great extent with brilliant plumage; for we have already seen how so many showy birds breed in covered nests. Indeed, it may almost be laid down as an axiom in oology that brilliant birds do not lay handsome eggs, and most of the finest marked eggs are laid by species singularly plain in dress.

To this rule, however, there are certain exceptions, and many white or spotless eggs are laid in open nests. If these examples are sufficiently numerous to merit the importance of a separate group, the existence of any laws of colour might be doubted by the casual observer. These instances are both striking and numerous; but when we come to study and investigate them, we find that they only tend to prove the existence of such laws in a very marked degree. The Ducks all lay spotless eggs, light in colour, greenish-white, cream colour, and pure white, and as they lie in the nest are very conspicuous and readily seen at long distances. The Pheasant and the Partridge also lay eggs of colours not much aiding in their concealment. The Grebes may also be cited as instances. But all these birds possess the singular habit of covering their eggs with materials similar in colour to surrounding objects when they leave their nests. We have already observed this singular proceeding in many species. It has been urged, and many naturalists are still of the opinion, that birds do not cover their eggs for concealment, but for warmth. The Pheasant (a native of hot climates) covers her eggs when she leaves them; but the Grouse (a resident almost among arctic snows) is never known to do so. Now the former bird's eggs are certainly conspicuous in

an open nest, and those of the latter are well adapted by their colour to harmonise with surrounding tints. If warmth is required in the one case, certainly it should be in the other also. Again, I have known the Wild Duck and some other birds cover their eggs so completely as almost to defy detection, and that, too, long before they had commenced to sit upon them, and when no warmth was required. I think, therefore, that there can be little doubt that it is solely from motives of concealment that these conspicuous eggs are covered.

But we find many conspicuous eggs laid in bare open places that are not concealed in such a cunning manner. We can take as an instance the Short-eared Owl that lays her white eggs on the open fens and marshes, or many of the Goatsuckers which deposit their white eggs in flimsy open nests. How are such eggs protected? The plumage of these birds is remarkably protective and assimilates very closely with the surroundings; moreover, they possess the habit of sitting very closely, conscious that they resemble the ground or branches and cannot readily be seen; and so they brood over their conspicuous eggs, shielding them by their sober plumage. We might also notice another rather puzzling instance belonging to this group, and that is to be found amongst the Pigeons. The nests of nearly all these birds are remarkably similar—platforms of twigs built in trees, rocks, or on the ground; and the eggs are in all cases, so far as is known, white, or nearly so, and spotless. Pigeons' nests are very slight and inconspicuous, and, as a rule, built in the dense cover; moreover, the birds themselves are excessively wary. Again, the very fact that these birds are so abundant and so widely spread over the world, notwithstanding their white eggs and open nests, is in itself strong evidence that these birds and their eggs are not much exposed to enemies or are well able to elude them, and also shows us how cautious we

should be in looking upon such facts as serious objections opposed to laws of nidification and colour. It remains now but to notice the eggs of such birds as the Herons, the Cormorants, and the Storks, all of which lay conspicuous eggs in an open nest. It is quite evident in these cases that the birds by their own prowess alone shield their eggs from danger; besides, most of these birds are gregarious, and are well able to beat off any enemy that is likely to approach, if not singly, by uniting for the purpose, so that it is of no special advantage for them to conceal their eggs. We must also remember that these birds may have descended from a hole-building ancestor—most probably from an ancestor that laid colourless eggs.

We now come to our second great division, in which the eggs are beautifully adorned with various hues, and as our first group we will notice those that are laid in open nests. As our first instances may be mentioned the Lesser Tern and the Ringed Plover, both of which we minutely examined when studying these birds' habits and economy. The Common Sandpiper's eggs assimilate so closely with the tints around them as to make their discovery a matter of no small difficulty, as every oologist can testify who has searched for them. The Lapwing's eggs, dark in ground colour and boldly marked, are in strict harmony with the sober tints of moor and fallow, and on this circumstance alone their concealment and safety depend. Another instance may be found in the eggs of the Dotterel, far up the hillsides, amongst the incessant mists, where their rich brown markings and stone-coloured ground tints harmonise closely with the colours of their mountain resting-place. The Diver's eggs furnish another example of protective colour; they are generally laid close to the water's edge, amongst drift and shingle, where their dark tints and black spots conceal them by harmonising closely with surrounding objects. The Snipes and the great army of

Sandpipers furnish instances innumerable of protectively-coloured eggs. In all the instances given the sitting-bird invariably leaves the eggs uncovered when it quits them, and consequently their safety depends solely on their colour. A passing word should here be given to the eggs of the Gulls. Some of these species depend for the safety of their eggs upon the colours which adorn them; but some species do not require such protection, the birds being well able to guard them from any enemies by their own prowess. The law of Inheritance explains this. The Gulls have descended from a common ancestor—a form probably intermediate between a Gull and a Plover, which depended on the colour of its eggs for their safety; and consequently we find a certain type of eggs peculiar to the whole group, of benefit to the majority of species, of little or no service to a few, but still retained by the law of Inheritance.

Those birds building open nests amongst the foilage of trees and shrubs, as a rule lay eggs more or less of a green colour. The Crows in the topmost branches, the Thrushes in the lower shrubs, and many of the Warblers in the dense undergrowth, may be cited as instances. Again, the Bullfinch and the Greenfinch lay bluish-white eggs, spotted with red, in open nests; but these birds build in the darkest thickets and hedgerows and amongst evergreens.

A word as to the marvellous variation and beautiful colours of the eggs of the Guillemot. The extraordinary amount of variation in the colour of these eggs appears to be a grave difficulty, and one which utterly refuses to conform to those laws that govern the tints with which so many birds' eggs are adorned. It is one of those very few instances where Nature has seemingly run riot in her variations, in a similar manner to those which occur in domesticated animals; for once let the checks to variation be removed, and its ramifications are infinite and endless in a few generations. Why, we are apt

to ask, do the Guillemot's eggs vary so considerably? Why are they allowed to present such diversity of colour, whilst the eggs of most other birds are strictly confined to certain tints? We may attribute the vast variation in the colouring of the Guillemot's eggs to the comparatively easy conditions under which they are brought to maturity. The bird's haunts are practically inaccessible; the eggs and young have few enemies, and the variations which occur in the eggs are consequently of small moment. Each variety, according to the Guillemot's present conditions of life, has no more favour than the other; but should the conditions of their existence change, should their eggs be exposed to some new danger, the variety best suited to those changed conditions would doubtless be most favoured—the others not so suitably coloured would, in the course of time, ultimately be weeded out by a rigorous selection, and the colours would most probably be confined to certain uniform protective tints. The colour of birds' eggs is hereditary. A Guillemot that lays a green egg always lays a green egg, and it will transmit the faculty of laying a green egg to its offspring. This circumstance is not peculiar to the Guillemot, but is common to all birds; and the variation we see in every species is the produce of certain individuals, and is transmitted to their young. Hence it is easy to imagine how the Guillemot's eggs would soon revert to a uniform and protective tint were its conditions of life to demand it; birds laying eggs unadapted in colour to their changed conditions of life would have small chance of transmitting those injurious colours to a very distant posterity—would soon die out completely; and the birds that laid eggs most suitable to the changed conditions and in harmony with them would increase and multiply, and the colours on their eggs be preserved. This, I believe, is how all eggs have got their beautiful tints, and how they are preserved or changed as circumstances arise.

Again, the young birds of many species absolutely depend for safety on the colour of their down. The Lapwing is arrayed in tints that put us in mind of the tropics ; the sexes are alike ; yet they build an open nest on the bleak common, moor, or pasture, where sometimes not a shrub or heath tuft affords a haven of safety. Both birds lack weapons of defence ; but note how the safety of their young is ensured : their sombre downy plumage effectually conceals them from view. Upon the least alarm the brightly-coloured parents leave their helpless young, who instantly crouch to the ground and remain motionless ; their colour so closely harmonises with surrounding tints as to hide them effectually from enemies. The young of the Game Birds, of all the Sandpipers, and the Plovers, and of many sea-birds, might also be given as instances, all of which (where the parents' plumage is conspicuous and dangerous to the welfare of their eggs and young, and which nest in an open site) have young of protective tints.

As we found the anomaly of white eggs in open nests, so we also find that of spotted and highly-coloured eggs in covered nests. We take as our first example the Jackdaw, whose eggs are spotted and coloured in a remarkable manner, considering they are laid in a covered nest. The Chough is another instance, and the Magpie a third. I am inclined to believe that these three birds have changed the position or the form of their nest from an open to a covered one, and the eggs are consequently gradually losing their markings. The eggs of these birds are generally much paler than the eggs of the Crows laying in open nests, and they seem slowly reverting to a colourless type. When once any particular development ceases to be of service, its tendency is gradually to die out ; and this, I think, is the reason that so many birds nesting in covered sites lay eggs only slightly spotted ; or, as in many cases, when compared with the eggs of the family of birds to which they belong, show a marked decrease of coloration.

The Robin's eggs, as compared with those of its ally, the Nightingale, furnish another instance. The Robin's nest is well concealed and often built in holes, and its eggs are often white or only faintly spotted; the Nightingale's nest is open and more or less exposed, and its eggs are dark green and protective in colour.

What do all these interesting facts teach us? From a careful study of them we learn that birds' eggs exhibit such great diversity of colour for other and far more important ends than that of mere beauty; and their varied tints must be viewed (with *all* other beauty of colour in Nature) as an object by means of which great ends are attained.

The true relationship of birds is often demonstrated by a study of their eggs. The family likeness of birds, which extends through entire natural groups, is stamped indelibly on their eggs. Thus the experienced oologist, guided by their peculiar characteristics, is able to separate at a glance the eggs of the Shrikes, the Crows, the Snipes, the Birds of Prey, or those of any other great natural group of birds. This is almost as apparent in shape as in colour. Snipes' and Plovers' eggs are extremely pyriform; Kingfishers' and Owls' are round; Pigeons', Goatsuckers', and those of the Sand Grouse are oval; Grebes' are pointed at each end. We find these characters constant in each group respectively. Take, for instance, the great family of the Ducks, numbering nearly two hundred species distributed throughout the world. All their eggs possess certain characteristics which enable us readily to identify them. The same remarks apply to the Sandpipers and the Plovers, each of which great natural group numbers upwards of a hundred species, which are as cosmopolitan as the Ducks; and the eggs of both are so characteristic that a glance is sufficient to recognise them. Take, as another instance, the eggs of the family of Gulls. Those of the true Gulls most nearly resemble those of the Sandpipers in colour, whilst those of

the Terns show more affinity to the true Plovers ; and this may probably be accounted for by the nidification of each group resembling most closely that to which the eggs are allied in general appearance. The Game Birds are also another instance. So far as I know, the eggs of these birds never have any underlying markings—all the colour is on the surface ;¹ and this is one great reason why the aberrant Hemipodes should be excluded from this group of birds, for their eggs possess both characters of markings, and therefore show the bird's affinity to the Rails, the Plovers, and the Bustards. It is also very remarkable how the eggs of some birds resemble those of the species belonging to very distantly related groups, where the conditions of nidification are similar. The Sand Martin and the Woodpecker, or the Dipper and the Kingfisher, are good examples in which a covered nesting-site is peculiar to each, and the eggs are uniformly white. In cases where the eggs differ considerably from those typical of the group, we generally find that the mode of nidification adopted by the species is from some cause different and aberrant too. Take, for instance, the eggs of the American Quail, which are white and laid in a domed or covered nest ; whilst those of the allied Plumed Quail are normally spotted and blotched, and, it is needless to say, laid in an open nest !

What do we infer from these interesting facts ? What do they teach us ? I think they show beyond the possibility of doubt the more or less close relationship of one bird to another, and prove the community of origin of birds in each great natural group, in each family, and in many genera. We have thus seen that birds, aided by a rigorous natural

¹ It is well here to point out that if an egg, say of a Guillemot, is examined, many of the spots will be found to be much paler than the others. This paleness is due to their being covered by a thin coating of shell material, which, if scraped away, will make them appear as rich in colour as those that lie upon the surface. The rich dark class of spots are known as surface markings ; the pale gray ones as underlying markings.

selection, strive to the utmost of their ability, in many different ways, to ensure the protection of their eggs and young from danger until they reach maturity—

“Each its well-chosen site selects, where Nature
To its best concealment aids and favours it.”

Enemies numerous and deadly continually surround them—the prying Magpies and Jays, the subtle snakes and lizards, the active field-mice, rats, and weasels, are all passionately fond of eggs, and search incessantly for them. We have seen that all the wiles birds display during the period of nidification, all or nearly all the beauty in their nests, all or nearly all the beauty in the colouring of their eggs and in much of the old and young birds' plumage (in the former through the subtle laws of Isolation and Sexual Selection), are subservient to the conditions of reproduction, and may safely be attributed to a one great Protective Cause!

In the present remarks on Birds' Nests and Eggs I have taken nearly all my illustrative instances from the birds of our own land. But were we to seek instances from other climes, where bird-life under favourable conditions exists on a much wider and more comprehensive basis, still more convincing would our proofs become. As regards eggs, perhaps, but little more could be said; but as regards the plumage of birds and their nests—say in the tropical regions—instances almost innumerable might be found showing how universal are those laws which govern the nidification of birds. Sufficient, however, has been said to show what an important part Colour plays in the nidification of birds, and that this portion of their economy is governed most closely by Law. If I have succeeded in showing that Birds' Nests and Eggs are not the unimportant objects they are so popularly believed to be, and that a careful study of them, in conjunction with the birds themselves, helps to elucidate some of the grandest questions

affecting organic life, my end has been amply attained. For no matter how unimportant an object or a series of facts may seem, we must not despise them, or pass them by. Nature's system is one mass of intricate complexity, becoming more evident the more we study it; and the only means of gaining an insight as to how that system works is by dealing with each phenomenon, not separately, but as a relative part which assists in forming an almost perfect and harmonious whole. Birds' nests and birds' eggs have a long, important, and intensely interesting history, and the study of these beautiful objects opens up a wide and fruitful field of research.

THE END

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